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BRITISH MEDICAL JOURNAL

LONDON SATURDAY OCTOBER 14 1944

# THE CONTROL OF BACILLARY DYSENTERY

BY

R. W. FAIRBROTHER, M.D., D.Sc., F.R.C.P.

*Lieut.-Col., R.A.M.C.*

Bacillary dysentery is an important endemic disease of this country, and is characterized by frequent localized outbreaks which are usually unrelated in origin and are caused almost exclusively by the Sonne and Flexner organisms. Its incidence has increased considerably since the outbreak of the war, but this is not unexpected, as under wartime conditions it is often necessary to accept relatively low standards of hygiene; this applies particularly to troops under active-service conditions.

The failure to control bacillary dysentery in this and other countries has not been satisfactorily explained, but, following recent developments in laboratory technique, evidence is now accumulating which may provide a solution to this problem. The isolation of *Bact. dysenteriae* has been greatly facilitated, and as a result it has been possible to establish several facts which indicate that the procedures at present adopted to control the disease require careful and critical examination. Knowledge of the epidemiology of dysentery was previously derived from media with little, if any, selective action for *Bact. dysenteriae*, and was consequently often inaccurate, owing to the frequent failures to isolate the causative organisms not only from convalescents but also from actual cases of the disease. By the use of the highly selective desoxycholate-citrate medium the following points have been firmly established by many independent workers: symptomless carriers are common during an outbreak of dysentery; convalescent and symptomless carriers may excrete intermittently the organisms for long periods; sulphonamide therapy has proved satisfactory in Flexner infections, but not particularly successful in clearing Sonne infections (*E.P.H.L.S. Bull.*, 1942, 1943; Watt, Hardy, and De Capito, 1942; Fairbrother, 1943; Hardy and Watt, 1944).

The epidemiology of bacillary dysentery is thus a complex problem, but considerable progress has been made during the past two years. It is now clear that rigorous control measures and a long-term policy are necessary if the disease is to be eradicated from this country. In dealing with outbreaks it is essential that a thorough bacteriological investigation should be carried out on all clinical cases and close contacts, particularly persons concerned with the handling of food, and that all infected persons should be treated and, if possible, segregated until free from infection.

Several important questions, however, remain unanswered: one is the number and frequency of negative faecal examinations required before an individual can be declared free from infection; the second is the treatment of Sonne dysentery. The results given below confirm previous observations about the persistent but intermittent excretion of *Bact. dysenteriae* and provide further data for consideration in discussing these problems.

### Technique

Samples of faeces, usually received within one or two hours of collection, were thoroughly suspended by means of sterile glass rods in small amounts of physiological saline. The thick suspensions were then plated on to desoxycholate-citrate (D-C) plates: in the case of fluid faeces, cultures were prepared directly with flakes of mucus. After overnight incubation at 37° C. suspicious colonies were selected for biochemical and serological tests; all plates were then reincubated for a further 24 hours, after which, if suspicious colonies had not been found, a negative result was reported.

The results of this investigation will be considered in two sections: (1) the carrier rate in bacillary dysentery; (2) the treatment of Sonne dysentery.

### 1. The Carrier Rate in Bacillary Dysentery

A favourable opportunity of studying the incidence of dysentery carriers was afforded by the arrival in this country of Italian P.sO.W. from the Middle East campaign. In order to provide some sort of hygienic control the faeces of all giving a history of dysentery or enteric fever during the past three or four years were subjected to bacteriological investigation. Many samples of faeces were consequently examined, and, rather contrary to accepted opinion, it was found that the carrier state was not infrequent. From some 2,500 individuals *Bact. dysenteriae* was isolated on 245 occasions—i.e., the carrier state existed in approximately 10% of those with a recent history of bacillary dysentery. Even this figure must be considered a low estimate, since in many instances it was only possible to examine one sample of faeces from each man; as it is well established that the excretion of *Bact. dysenteriae* by carriers is intermittent, some carriers were almost certainly missed because of the limited scope of the examinations. The types of *Bact. dysenteriae* isolated from the 245 carriers are given in Table I.

TABLE I.—*Types of Bact. dysenteriae isolated from 245 Italian Carriers*

| | | | |
|---|---|---|---|
| Flexner | 170 | Schmitz | 11 |
| Shiga | 57 | Sonne | 7 |

The majority of these carriers did not show any dysenteric symptoms; looseness of the bowels was uncommon, while the presence of blood and mucus was exceptional. There was thus no clinical indication of the infection in most of the carriers. Cultures prepared on MacConkey plates from these cases were almost invariably negative.

All carriers were given a routine course of sulphaguanidine —6 g. three times on the first day, and then 3 g. three times a day for the next five days, making a total dosage of 63 g. in six days. In order to ensure the complete elimination of the drug clearance tests were not started until five days after completion of the course, and consisted originally of three successive negative examinations of the faeces (*A.M.D. Bull.*, 1942; *E.P.H.L.S. Bull.*, 1943). During later stages of this investigation abundant evidence was, however, forthcoming that 3 successive negative results did not constitute a reliable criterion of freedom from infection: *Bact. flexneri* was isolated on one occasion after 8 successive negative results, *Bact. shigae* after 6 successive negatives, while *Bact. sonnei* was frequently isolated after 3 and on one occasion even after 10 previous negative results. In consequence, more rigorous tests consisting of 12 successive negative results were introduced to determine clearance of the infection. It follows from these observations that the earlier results of sulphaguanidine therapy in this series were not adequately controlled. However, according to the different standards used, the treatment appeared to

be successful in 227 cases; the 16 failures were—Flexner 12, Shiga 2, and Sonne 2. The majority of the 16 cases were cleared by a second course of sulphaguanidine.

These results indicate that the carrier state in bacillary dysentery is relatively common and persistent, as in many cases the acute stage of the disease had occurred some two or three years previously. The carrier state does not usually give rise to symptoms, and therefore clinical evidence of its existence is not present. The results also suggest that sulphaguanidine is a satisfactory agent for the treatment of dysentery carriers; it is important, however, to note that only a few Sonne carriers were found. In view of the inadequate clearance tests used for most of the cases, it is impossible to give a definite opinion on this matter. While it is generally agreed that Flexner infections respond well, clinically and bacteriologically, to sulphaguanidine therapy, some of these observations have been based on unsatisfactory clearance tests, which were either too few in number or were carried out immediately after completion of the sulphaguanidine treatment. There is, however, much evidence to support this contention, which the above results tend to confirm.

### 2. Treatment of Sonne Dysentery

Sonne dysentery, particularly in adults, is the mildest form of the disease. The usual course is merely a transient looseness of the bowels lasting 24 to 48 hours, while in most outbreaks symptomless carriers are found during routine investigations. Nevertheless, in spite of the trivial clinical signs, *Bact. sonnei* tends to persist in the faeces for relatively long periods after clinical recovery, and has frequently proved resistant to treatment with the sulphonamides. Sulphaguanidine has been disappointing in producing bacteriological cure, and a new derivative, succinyl-sulphathiazole, is now being tried (M.R.C. War Memorandum, 1943). A small supply of this drug became available, and its value in Sonne dysentery has been investigated.

Of the 92 cases of Sonne dysentery studied 73 were in members of the A.T.S. A few of these were sporadic cases, but the majority were involved in small, localized outbreaks of some 8 to 12 cases, and were either of a mild clinical type or symptomless carriers. In each outbreak there were also a few cases showing slight transient diarrhoea, but from these *Bact. sonnei* was never isolated, in spite of repeated tests. While these cases were probable mild Sonne infections they have not been included in this investigation.

In view of the trivial form of the disease and the small supply of succinyl-sulphathiazole available, sulphonamide therapy was withheld from the majority until it appeared that the carrier state was developing. The patients were placed on a routine form of therapy consisting of rest in bed, saline purges, and light diet; bacteriological examinations of the faeces were carried out immediately, and then at frequent intervals until a positive result was obtained, after which tests were made at intervals of two or three days. As soon as a negative result was reported daily tests were made until 12 successive negative results had been given; during this period a few doses of a saline purge were administered. On an average some 18 tests were carried out on each patient. Sulphonamides were given only when the excretion of *Bact. sonnei* had persisted for three or four weeks after the onset of the disease. In these cases clearance tests were not started until at least five days after cessation of the sulphonamide, in order to ensure that the drug had been completely eliminated. This interval is an important factor in obtaining accurate results from the clearance tests. It was found that while negative results were almost invariably given immediately after the treatment, cases not infrequently became positive six or seven days later; only a few colonies appeared at first in positive cultures, but later a profuse growth of *Bact. sonnei* tended to develop. Failure to allow adequate time for the elimination of the sulphonamide from the faeces is thus an important source of error in carrying out clearance tests.

The various groups of cases are not strictly comparable because of the late stage of the disease at which the sulphonamides were usually given; it is therefore proposed to consider them separately according to the type of treatment received: (*a*) routine with sulphonamides; (*b*) sulphaguanidine; (*c*) succinyl-sulphathiazole.

(*a*) *Cases on Routine Therapy Without Sulphonamides.*—76 mild or asymptomatic cases of Sonne dysentery received the routine course of therapy—i.e., rest in bed, saline purges, and light diet. All recovered clinically within 48 to 72 hours. The prescribed tests for bacteriological cure (12 successive negative results) were carried out in all except a few of the earlier cases, in which the number of clearance tests was that generally recognized—namely, three. Of the 76 cases 45 (59%) resolved completely, as indicated in Table II.

Table II.—*Clearance of Infection in Sonne Dysentery (76 Cases without Sulphonamide Therapy)*

| Period of Disease | Number Cleared | Period of Disease | Number Cleared |
|---|---|---|---|
| 1st week .. .. .. | 24 | 3rd week .. .. .. | 4 |
| 2nd ,, .. .. .. | 15 | 4th ,, .. .. .. | 2 |

24 cases (32%) cleared spontaneously during the first week of the disease and a further 15 in the second week. A total of 39 (52%) cases thus resolved completely within two weeks of onset. A few cleared in the third and fourth weeks, but during this period treatment with sulphonamides was generally instituted, and it is highly probable that if left untreated more cases might have cleared spontaneously. Therefore in evaluating the effects of sulphonamides in mild cases of Sonne dysentery it is important to appreciate that in a high proportion of cases the carrier state is only of a transient nature and disappears early in convalescence; in this investigation at least 60% of the cases became bacteriologically clear within three weeks on ordinary routine treatment. When the infection persisted the excretion of *Bact. sonnei* was often intermittent: on one occasion a positive result was obtained after 10 successive negative examinations.

(*b*) *Treatment with Sulphaguanidine.*—Altogether 22 cases were treated with sulphaguanidine. The routine course (see above) was originally given, but, as some cases failed to respond satisfactorily, treatment was later extended to 8 or 9 days, making a total dosage of 81 or 90 g. Eight cases received the drug during the initial active stage of the disease; in two instances the symptoms were moderately severe, pyrexia was present, and blood and mucus were observed in the stools. Clinical response to the sulphaguanidine was invariably good, but from the bacteriological aspect the results were disappointing. Satisfactory clearance tests were given by 5 out of the 8 cases (63%). Of 13 convalescent carriers who also received a course of sulphaguanidine the infection was cleared in 11. One persistent carrier, however, had several courses of this drug, including one of 200 g., without success. A few cases received the sulphaguanidine in the form of an enema—10 g. in 4 oz. of water twice a day for 5 days. The response was similar to that following oral administration of the drug: a few convalescent carriers were cleared, but there was no effect on two persistent carriers. The use of this route for administering the drug was consequently abandoned, as there were no apparent advantages over the oral method.

(*c*) *Treatment with Succinyl-sulphathiazole.*—14 convalescent carriers, 1 relapsed case, and 2 persistent carriers were given the following course of succinyl-sulphathiazole: 6 g. three times a day on the first day and 3 g. three times a day for 7 or 8 days, making a total dosage of 81 or 90 g. The results were frankly disappointing, being little better than those of sulphaguanidine therapy. Satisfactory clearance tests were given by 13 out of 14 convalescent carriers, but positive cultures were obtained after treatment from the relapsed case, both persistent carriers, and one of the convalescent carriers.

These results indicate that sulphaguanidine and succinyl sulphathiazole have only a limited effect in Sonne dysentery. While the clinical response is good, their value in clearing *Bact. sonnei* from the faeces is less satisfactory: two persistent carriers have continued to excrete *Bact. sonnei* for some nine months in spite of repeated courses of both drugs. A further case of a moderately severe type continued to excrete the organisms although treated with both drugs, but eventually cleared spontaneously two weeks after the faeces had been persistently and strongly positive in spite of recent treatment with succinyl-sulphathiazole and, earlier, with sulphaguanidine; altogether this case gave 10 positive and 26 negative results over a period of 16 weeks.

In view of the mild nature of Sonne infections, sulphonamide therapy is usually required to effect a bacteriological rather than a clinical cure. While these drugs are useful for this purpose they have not proved entirely successful, and it is hoped that a more effective compound will eventually be produced.

There is no satisfactory explanation for the not infrequent failure of the sulphonamides to effect a bacteriological cure in Sonne infections. The *in vitro* activity of the sulphonamides on various strains of *Bact. dysenteriae* was investigated, using the ditch-plate technique, as it was possible that the irregular results might have been due to variations in strain resistance

A solution to the problem was not, however, forthcoming. Flexner and Sonne strains behaved in a comparable manner throughout; succinyl-sulphathiazole exercised a definite inhibitory activity on both organisms, but sulphaguanidine proved relatively ineffective; while evidence was not obtained that the persistence of infection was due to the development of sulphonamide-resistant strains of *Bact. sonnei* (Beemer and Fairbrother, 1944). A probable explanation of the uncertain action of the sulphonamides in Sonne infections is that, as Sonne dysentery is usually a mild disease, the organisms multiply on, rather than in, the mucous membrane and do not produce the severe ulceration which is usual in the other types of bacillary dysentery. The Sonne organisms thus tend to lead a more saprophytic existence than the other members of the dysentery group; this biological variation is probably reflected in the biochemical activity of *Bact. sonnei*, which is the only pathogenic member of the genus *Bacterium* to ferment lactose. In consequence of its relatively saprophytic existence, contact with the organisms by the drug is more difficult to effect than in the case of the more parasitic members, which multiply in the damaged mucosa. During sulphonamide therapy most of the organisms are eliminated, but a few, perhaps protected by faeces, escape the action of the drug and propagate when the inhibitory action of the sulphonamide is removed. There appears to be an analogy between Sonne dysentery and streptococcal tonsillitis: in both conditions the clinical response to sulphonamide therapy is often good, while the bacteriological response is poor. In neither case is the failure to effect a bacteriological cure essentially due to the development of drug resistance by the organisms.

## Discussion

These results confirm previous observations and indicate that in order to control bacillary dysentery it is essential that (1) all outbreaks of the disease must be subjected to thorough bacteriological investigations, and (2) stringent clearance tests must be satisfied before a case can be considered free from infection.

The eradication of the disease from this country requires the detection and treatment of all carriers of *Bact. dysenteriae*. The important part played by the carrier in the persistence and spread of bacillary dysentery in the community is now firmly established, and is well illustrated in the epidemic reported by Hailwood (1944). In this outbreak 292 cases of diarrhoea occurred in a unit of some 900 men while at a practice camp. The faeces from only 81 cases were positive for *Bact. sonnei*, but bacteriological investigations were not started until some 14 days after the onset of the outbreak, by which time the infection would have cleared spontaneously in many cases. The source of the infection was proved to be a chronic symptomless carrier who had had no symptoms of dysentery since a moderately severe attack some 12 months previously, but whose stools still yielded a heavy growth of *Bact. sonnei*. This man had been mainly employed in cutting bread-and-butter.

The detection of carriers is unfortunately a matter of considerable difficulty, as many exist and some have never shown the symptoms of the disease and can only be discovered by laboratory methods, which should consequently be widely applied as soon as an outbreak is reported. The introduction of highly selective media, such as desoxycholate citrate, has greatly simplified the isolation of *Bact. dysenteriae* and has revealed an unexpectedly high incidence of carriers. Results obtained by the use of old media, such as MacConkey's, are completely valueless in dealing with convalescent or symptomless carriers, and it is doubtful if these media fulfil any useful function in the examination of faeces.

The high incidence of carriers, particularly of Flexner strains, found in Italian soldiers indicates that the development of the carrier state in bacillary dysentery is a common feature of the disease. This raises a hygiene problem of great importance. Bacillary dysentery has been widespread among our troops in N. Africa, and in some 70% of cases in which bacteriological investigations were carried out (incidentally only a small percentage of the total number) *Bact. flexneri* was the responsible organism. Sulphaguanidine therapy was not universally applied, little or no attempt was made to discover symptomless carriers, and in the majority of cases bacteriological control in the form of clearance tests was not possible. There is consequently little doubt that a number of carriers will have developed and that such individuals will be a potential source of infection on return to Great Britain. This has already proved to be the case. *Bact. dysenteriae* has been isolated not infrequently from men returning and giving a history of dysentery some time previously but not at the time showing actual symptoms of the disease. A routine check of all persons returning from abroad is not practicable. It is therefore necessary that if such individuals are involved in any outbreak they should be subjected to rigorous tests before being considered free from infection.

Another essential factor in the control of dysentery is the establishment of a satisfactory standard for the clearance tests. It is obvious that the criterion of freedom from infection at present generally accepted—i.e., three successive negative results—is quite unreliable. During this investigation positive results have been obtained in Shiga, Flexner, and Sonne infections after as many as 6, 8, and 10 successive negatives respectively, while positive results after 3 successive negatives have been encountered with great frequency in Sonne infections. Stringent measures must therefore be adopted in order to provide a satisfactory criterion of bacteriological cure, and it is recommended that (i) where laboratory facilities are readily available at least 12 successive daily negative results should be obtained, and (ii) where laboratory facilities are poor 12 successive negatives should be obtained over a period of at least 3 weeks; in all cases tests should not be started until 6 days after cessation of treatment if sulphonamides have been used. The need for a more exacting criterion of freedom from infection in cases of Sonne dysentery was pointed out by the Emergency Public Health Laboratory at Oxford (*E.P.H.L.S.Bull.*, 1942) during an investigation of a small outbreak in children; they required 8 consecutive negative stools in 4 weeks or at least 6 negatives in 6 weeks before a case was discharged from isolation hospital. A few carriers may still be missed by these exacting tests; but less rigorous standards are certain to produce erroneous results and a position of false security owing to the intermittency of excretion of *Bact. dysenteriae* by carriers, particularly in the case of Sonne infections. It is admitted that the segregation of apparently healthy individuals for relatively long periods is a serious proposition, but such a measure is unfortunately essential in the case of any person involved in the handling or preparation of food, or in dealing with the disease in nurseries, schools, and mental institutions, where minor epidemics are prevalent and difficult to control.

The intermittency of excretion of *Bact. dysenteriae* also presents difficulties in the detection of carriers during an investigation of an outbreak. Unless several faecal examinations are made from each close contact it is possible for a carrier to escape detection. Therefore, when individuals are strongly suspected of being carriers, repeated tests must be carried out before a final opinion can be given.

The control of bacillary dysentery is thus a formidable proposition. The disease is widespread and, while many carriers already exist in the community, the number is likely to increase when troops return from service over-seas. Recent epidemiological studies clearly indicate that, unless the problem is tackled rigorously and a long-term policy adopted, hygienic control will have little effect on the incidence of the condition. Efforts to limit the disease by directing attention to personal hygiene and sanitation have not proved particularly successful, for, while these measures are simple and fundamental, they are difficult to enforce. These factors are without question of great importance in restricting transmission, but as long as the causative organisms are prevalent in a community they constitute a potential source of danger. Hardy and Watt (1944), during an extensive investigation of acute diarrhoeal disease in the U.S.A., found that dysentery bacilli could be isolated with ease from the fingers and from under the finger-nails of culturally positive cases and carriers.

Under active-service conditions over-seas the control of dysentery presents a much more difficult problem. The disease is often widespread in the native population, flies are abundant, hospitals are soon filled with cases, and, as laboratory facilities are relatively meagre, bacteriological control of the disease is impossible and is no longer attempted. In this country, particularly under normal conditions, the problem is much less

complex, but nevertheless careful consideration is necessary in deciding whether bacteriological control of bacillary dysentery is a practical proposition, because only thorough and intensive measures are likely to be successful. The main objections to embarking on an energetic campaign to control bacillary dysentery are: In this country the disease in adults is usually trivial, perhaps of comparable incapacitating value to the common cold, and many cases do not report for medical attention; many carriers exist; apparently healthy people may be segregated for relatively long periods; and the clinical course of the disease is readily controlled by sulphonamide therapy. It is, however, recognized that dysentery in infants, particularly undernourished infants, may be a serious and even fatal disease. Moreover, recent developments in laboratory technique have provided valuable information on the epidemiology of the disease and the detection of carriers has been greatly simplified; while the sulphonamides have proved extremely valuable in clearing all types of infection except Sonne. It should therefore be possible for us eventually to control bacillary dysentery provided all outbreaks are subjected to strict bacteriological control. Dramatic results must not be expected, as, in view of the wide distribution of the disease, its elimination from this country will undoubtedly prove a slow process.

**Summary**

The frequency of the carrier in bacillary dysentery and the intermittent excretion of *Bact. dysenteriae* have been readily demonstrated by the use of the desoxycholate-citrate medium.

Sulphaguanidine and succinyl-sulphathiazole have not proved successful in clearing persistent carriers of *Bact. dysenteriae* (Sonne).

The control of dysentery has been discussed and more stringent criteria recommended to determine freedom from infection—viz., 12 successive negative results.

I wish to thank the many persons who have provided valuable assistance during this investigation, particularly in the collection of the numerous specimens and the administration of the sulphonamides, and also Col. J. S. K. Boyd for much helpful criticism.

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# PLASMA ACID PHOSPHATASE IN CARCINOMA OF THE PROSTATE AND THE EFFECT OF TREATMENT WITH STILBOESTROL

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Kutscher and Wolbergs (1935) found large amounts of a phosphatase, having an optimum activity in the region of *p*H 5.0, in normal human prostate tissue and seminal fluid. Pursuing this investigation, Gutman, Sproul, and Gutman (1936) detected the enzyme in carcinomatous prostatic tissue and at the site of skeletal metastases secondary to carcinoma of the prostate.

Gutman and Gutman (1938) further observed an increase of "acid" phosphatase in the serum of patients with metastatic carcinoma of the prostate gland, and suggested that its estimation was of diagnostic value: patients with carcinoma of the prostate without bone metastases did not show an increase of acid phosphatase. Huggins and his collaborators (1941, a, b, c), at the University of Chicago then gave evidence that carcinoma of the prostate, in common with adult prostatic epithelium, is responsive to alterations in the level of androgenic hormones in the organism. Injection of androgen caused a rise, and castration or injection of oestrogen a fall, in the plasma acid phosphatase. A study of the effects of castration and of oestrogen administration as a means of clinical management of advanced prostatic carcinoma showed that the improvement obtained was more than a palliation. Only 5% of the cases treated derived no benefit. Of the remainder, half showed a pronounced improvement, which was not, however, sustained for longer than 18 months. The others showed a more prolonged improvement.

The above work has been amply confirmed by other American authors: Sullivan *et al.* (1942) on the effect of castration; Kahle, Ogden, and Getzoff (1942) on the effect of stilboestrol; and Munger (1941) on that of *x*-irradiation of the testes. A review of the whole field has recently been given by Haddow (1943).

In preliminary investigations in these laboratories acid phosphatase estimations were performed on the plasma of normal controls, of patients with conditions other than carcinoma of the prostate, and of cases of carcinoma of the prostate with and without metastases in bone. Estimations were also carried out on normal human seminal fluid and in a case of eunuchoidism. In later work at the Royal Cancer Hospital more detailed investigations have been made on cases of carcinoma of the prostate and the effect of treatment with stilboestrol.

The cases now presented are unselected, although in one respect atypical in that they include a high proportion with osseous spread. No case was treated by *x*-irradiation of the testes or by castration, and in order to obtain clear results in cases in which the prostate had been irradiated previously, time was allowed for the full effect of this procedure to be assessed before oestrogen therapy was begun.

## Method of Estimation of Acid Phosphatase: Principle

The *p*H optimum of acid phosphatase is between 4.5 and 5.0; that of alkaline phosphatase is between *p*H 8.4 and 10.0, depending upon the substrate used. Because of this great difference it is possible to estimate one phosphatase in the presence of the other merely by allowing it to act upon the substrate at its characteristic optimum *p*H. Thus the alkaline phosphatase in blood plasma is inactive at the reaction at which acid phosphatase operates best, and vice versa.

## Method

The procedure for acid phosphatase determination is identical (and the solutions are the same, with the exception of the buffer) with that for alkaline phosphatase (see King, Haslewood, Delory, and Beall, 1942). An incubation time of 1 hour at 37° C. is normally used. The results are expressed in terms of units which are equal to mg. of phenol liberated in 1 hour. The calculation is carried out in the same way as for alkaline phosphatase. There are normally 1 to 5 arbitrary acid phosphatase units in 100 ml. of serum or plasma.

The colours are somewhat pale in the case of normal blood and in cases of carcinoma of the prostate in which the acid phosphatase is not greatly elevated, and it may be preferable in these instances to use a longer incubation period—e.g. 3 hours. If this is done the weight of phenol liberated (in mg.) is divided by 3 to reduce the figure to 1-hour units.

## Solutions

*Citric Acid–Sodium Citrate Buffer, pH 4.9*—21 g. of crystalline citric acid are dissolved in water, 188 ml. of N NaOH added, and the solution made up to 500 ml. The *p*H should be checked, and adjusted to *p*H 4.9, if necessary, by dropwise addition of N NaOH or N HCl. This solution should be preserved with a few drops of chloroform and kept in the ice-chest. The other solutions are identical with those described by King *et al.* (1942).

## Results

*Acid Phosphatase in Plasma.*—The values (Table I) for normal controls are somewhat higher than those given by Gutman and Gutman (1938), which range from 0.5 to 2.5 units per 100 ml. This may be explained by the fact that these authors prefer to employ a 3–5 hours' hydrolysis, and obtain a figure for 1 hour's hydrolysis by division.

TABLE I.—*Plasma Acid and Alkaline Phosphatase in Various Clinical Conditions (Average Values)*

| | No. of Cases | King-Armstrong Units per 100 ml.* | |
|---|---|---|---|
| | | Acid | Alkaline |
| Normal controls | 9 | 2·8 (1 to 5) | 7·3 (3 to 10) |
| Heart disease | 5 | 3·4 (1 to 5) | 7·2 (5 to 12) |
| Anæmia | 4 | 2·0 (2) | 8·8 (5 to 13) |
| Cholecystitis | 2 | 3·0 (2 to 4) | 9·0 (8 to 9) |
| Catarrhal jaundice and hepatitis | 15 | 3·8 (1 to 5) | 16·1 (8 to 31) |
| Obstructive jaundice | 20 | 3·5 (1 to 5) | 56·9 (10 to 163) |
| Primary carcinoma (stomach) | 4 | 4·0 (2 to 5) | 10·3 (6 to 14) |
| Enlarged prostate | 12 | 3·3 (1 to 5) | 6·1 (3 to 9) |
| Carcinoma of prostate (without bone metastases) | 8 | 3·1 (1 to 6) | 8·0 (4 to 11) |
| " " (with bone metastases) | 7 | 11·3 (6 to 19) | 42·0 (7 to 87) |

* Range in parentheses.

*Acid Phosphatase in Seminal Fluid.*—The method used was that described, except that the seminal fluid needed to be suitably diluted with normal saline. The results for 12 normal persons are given in Table II, which also includes two estimations on a case of eunuchoidism. They are in good agreement with those of Gutman and Gutman (1941), who reported figures varying from 570 to 3,700 units per ml. in 10 normal specimens. The eunuchoid specimens contained relatively negligible amounts of acid phosphatase. These results are expressed as units per ml., while the plasma results are as units per 100 ml., so that the quantities in the seminal fluid are relatively enormous—i.e., about 100,000 times greater.

TABLE II.—*Acid Phosphatase of Human Seminal Fluid*

| Case | Units per ml. | Case | Units per ml. |
|---|---|---|---|
| 1 | 2,100 | 8 | 2,100 |
| 2 | 2,100 | 9 | 1,900 |
| 3 | 1,950 | 10 | 1,800 |
| 4 | 3,300 | 11 | 2,000 |
| 5 | 1,800 | 12 | 2,200 |
| 6 | 2,700 | Eunuchoid case | 24 |
| 7 | 870 | " " | 20 |

*Plasma Acid Phosphatase in Cases of Prostatic Carcinoma treated with Stilboestrol.*—Table HI shows the initial values.

TABLE III.—*Plasma Phosphatases in Cases of Prostatic Carcinoma before Treatment with Stilboestrol*

| Case No. | Age | Initial Plasma Phosphatase Value (King-Armstrong Units) | | Basis for Diagnosis | Site of Bone Metastases |
|---|---|---|---|---|---|
| | | Acid | Alkaline | | |
| 1 | 66 | 12·2 | 8·9 | Section | Pelvis and spine |
| 2 | 58 | 41·0 | 15·0 | Clinical: *x*-ray | Pelvis |
| 3 | 72 | 21·6 | 24·0 | Section | Ribs and pelvis |
| 4 | 62 | 5·3 | | " | Spine and pelvis |
| 5 | 70 | 37·0 | 25·0 | " | Osteitis deformans in pelvis and spine |
| 6 | 60 | 17·0 | | " | Ribs, spine, pelvis, and femora |
| 7 | 71 | 2·0 | | " | Osteitis deformans in pelvis and spine |
| 8 | 37 | 1·3 | | " | Nil |
| 9 | 77 | 2·9 | 5·5 | Clinical | Nil |
| 10 | 61 | 3·9 | 10·0 | " | Nil (abnormal opacity ischium) |

Six of the cases had a raised acid phosphatase content, and in 5 of these there was radiographic evidence of metastases in bone. Although Case 5 had an initial value of 37 units, we have as yet found no evidence of skeletal metastases, detection of which was made difficult here, as in Case 7, by the presence of osteitis deformans in pelvis and spine.

Several of the results do not show any marked distinction between prostatic carcinoma and Paget's disease. Gutman, Gutman, and Robinson (1940) also found that some cases of advanced Paget's disease had high acid phosphatase values, but in their whole series 26 sera, from a total of 32 cases of Paget's disease, gave normal readings. It is therefore possible that the few results given here are not truly representative of Paget's disease. Gutman considered the possibility that the high acid phosphatase results in Paget's disease were due to the incomplete inactivation of the alkaline phosphatase at *p*H 4.9, but excluded this possibility because of the lack of proportionality between the values of the two *p*H's.

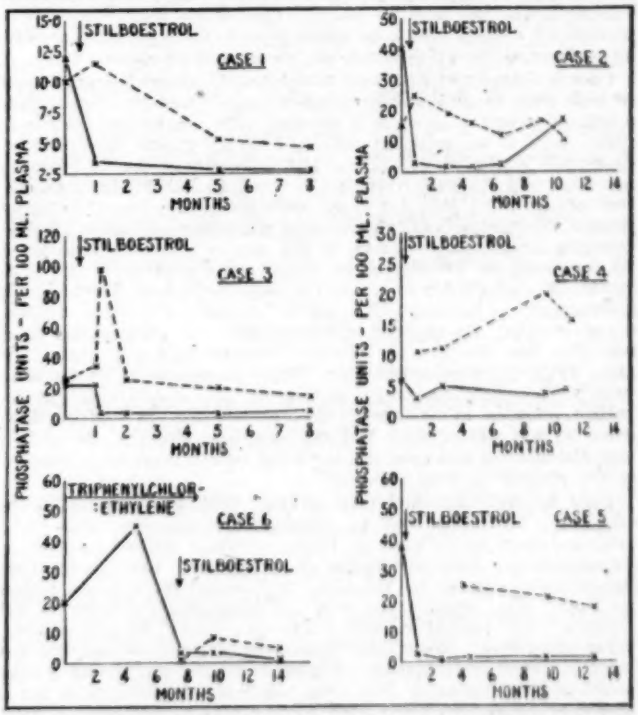
For comparative purposes 3 cases of malignant disease, other than carcinoma of the prostate, are shown in Table IV.

TABLE IV.—*Plasma Phosphatases in Bone Diseases other than Carcinoma of the Prostate with Metastases*

| Case No. | Age | Initial Plasma Phosphatase Value (King-Armstrong Units) | | Diagnosis | Site of Bone Metastases |
|---|---|---|---|---|---|
| | | Acid | Alkaline | | |
| 1 | 66 | 4·3 | 29·0 | Osteitis deformans | — |
| 2 | 65 | 1·3 | 48·0 | " " | — |
| 3 | | 8·0 | 26·0 | " " | — |
| 4 | | 11·0 | 87·0 | " " | — |
| 5 | | 5·0 | 42·0 | " " | — |
| 6 | | 2·7 | 71·0 | " " | — |
| 7 | | 5·2 | 245·0 | " " | — |
| 8 | | 2·5 | 43·0 | " " | — |
| 9 | | 4·0 | 43·0 | " " | — |
| 10 | 65 | 6·3 | 34·0 | Carcinoma of breast | Ribs and vertebrae |
| 11 | 68 | 2·1 | 23·2 | " | " |
| 12 | 32 | 1·7 | 10·3 | Site of primary uncertain | Pelvis, long bones, vertebrae, and skull |
| 13 | 58 | 1·7 | 42·0 | Osteitis fibrosa cystica | — |

The acid phosphatase value of one case of carcinoma of the breast is higher than those recorded by the Gutmans, in which values did not exceed 4.2 units (normal taken as 2.5 units).

The accompanying graphs show the behaviour of the plasma phosphatases during treatment with stilboestrol. The acid phosphatase falls abruptly to a normal value, which is then maintained for considerable periods, with a rise in alkaline phosphatase followed by a gradual fall. In Case 3 the phosphatases were estimated 1 week after stilboestrol therapy began, by which time 35 mg. had been given. No change had then occurred in the acid phosphatase level, but the alkaline phosphatase had begun to rise. The next set of values was obtained 10 days later, by which time 75 mg. of stilboestrol had been given and the characteristic fall in acid phosphatase had taken place.




Graphs of cases in which the plasma acid phosphatase was originally raised. ——, acid; – – –, alkaline.

Intramuscular administration was employed initially to obviate variations in absorption and because it gave an accurate record of the quantity administered. Dosage was very high in the first few cases treated and was reduced in

cases treated later. In spite of high dosage it appears to take an appreciable time for symptoms to improve and for a change in the prostate to be detected. The earliest improvement in back pain occurred on the 5th day of treatment, and no case showed a palpable change in the prostate before the 9th day. A full 6 months elapsed before secondary glandular masses diminished in size in Case 5. Since no case has been studied for more than 18 months (under stilboestrol therapy) it is not possible to say to what extent the dose may be reduced without detriment. There seems to be no advantage, other than that already stated, in giving the drug by intramuscular injection.

### Case Records: Carcinoma of Prostate

*Case 1.*—Aged 66; when first seen in May, 1943, complained of backache of some years' duration and frequency of micturition for 9 months. The general condition was fair, and haemoglobin level and blood picture were normal. The prostate was coarsely nodular, enlarged, and hard, extending laterally, chiefly on the right. Firm lymph nodes were present in both groins. The right lower limb was oedematous. Biopsy of an inguinal node was compatible with a metastatic deposit of prostatic carcinoma. *X*-ray examination of the pelvis and lumbar spine showed osteoplastic deposits. The initial plasma phosphatase values were: acid phosphatase 12.2 units, alkaline phosphatase 8.9 units. A total of 525 mg. of stilboestrol was given by intramuscular injection in 21 days and thereafter 5 mg. t.i.d. orally. During the first three weeks of treatment a progressive oedema of lower limbs, scrotum, penis, and abdominal wall developed, with an increase of weight of 14 lb. Injections were discontinued, and in two weeks the body weight had decreased by 12 lb., with disappearance of most of the oedema. A palpable shrinking and softening of the prostate was first noticed on the 9th day of treatment, while back pain was almost completely relieved in 1 month. Nocturnal frequency lessened from 3 times to once. The case was last seen in March, 1944, when improvement was maintained, although the *x*-ray appearances in the bony pelvis showed an increase in the number and size of secondary deposits.

*Case 2.*—Aged 58; first seen in April, 1943, when he complained of back pain, dysuria, and frequency of micturition for 2 years, with a loss of weight of 2 st. in 6 months. The general condition was poor, with a haemoglobin value of 46%. Blood films showed occasional nucleated red cells. The prostate was hard, irregular, and fixed. No regional lymph nodes were palpable. *X*-ray examination of the pelvis revealed early osteoplastic deposits. The initial plasma phosphatase values were: acid phosphatase 41 units, alkaline phosphatase 15 units. A total of 828 mg. of stilboestrol was given by intramuscular injection in 5 weeks, and thereafter 5 mg. t.i.d. orally. Back pain was improved on the fifth day and shrinking and softening of the prostate took place in 1 month. Frequency was less in 2½ months. At the end of June, 1943, the haemoglobin level was 64% and the prostate showed a further reduction in size. In Oct., 1943, the haemoglobin was 78%. Improvement in the back pain and in the condition of the prostate was maintained, and the patient returned to his work. He was last seen in March, 1944, when he was still at work and symptom-free, although the plasma acid phosphatase had risen and there had been a progressive increase in the number of bone deposits.

*Case 3.*—Aged 72; first seen in Oct., 1942, when he had acute retention. Treatment was by suprapubic cystostomy and high-voltage therapy to the prostate, biopsy of which showed an alveolar adenocarcinoma of a high degree of malignancy. Early osteoplastic deposits were present in the ribs. Stilboestrol therapy was begun in June, 1943, when there were no symptoms referable to the prostate. The general condition was very poor, the haemoglobin value being 37%. Suprapubic cystostomy was satisfactory, but the urine was thick and offensive. The initial plasma phosphatase values were: acid phosphatase 21.6 units, alkaline phosphatase 24 units. The prostate was hard and fixed but not greatly enlarged. A total of 75 mg. of stilboestrol was given by intramuscular injection in 19 days and thereafter 5 mg. t.i.d. by mouth. In July, 1943, the patient was readmitted complaining of intense pain in the left calf and shoulder, of sudden onset 2 days before. The temperature was 104° F., the pulse rate 130 a minute. The left calf showed a firm tender swelling, the overlying skin being reddened and hot. The left shoulder was held fixed and was tender to palpation over a wide area. One week later a similar swelling appeared over the left deltoid. The general condition improved gradually and both swellings subsided with symptomatic treatment: they were thought to be embolic in origin. In Nov., 1943, the haemoglobin level was 72% and the general condition was still improving. No alteration was detected either in the size or in the consistency of the prostate. When the patient was last seen in Jan., 1944, the haemoglobin had fallen to 58%. The condition otherwise appeared unchanged.

*Case 4.*—Aged 62; first attended hospital in May, 1940, for a course of high-voltage therapy after an incomplete prostatectomy, performed elsewhere. Section of the prostate gland showed an adenocarcinoma. In April, 1942, a firm mass appeared in the abdomen, and a further course of high-voltage therapy was given. At this time the patient complained of back pain, but *x*-ray examination of spine and pelvis failed to reveal secondary deposits. In Feb., 1943, back pain was constant, and radiographs now showed early osteoplastic deposits in the vertebrae. The general condition was fair, with a normal blood picture. A hard fixed residual mass was present in the prostatic bed. Frequency of micturition was pronounced. The initial acid phosphatase value was 5.3 units. A total of 315 mg. of stilboestrol was given by intramuscular injection in 14 days, and thereafter 5 mg. t.i.d. by mouth. After one month back pain had lessened, and there appeared to be some improvement in diurnal frequency. The local findings remained unchanged throughout. The patient returned to light work, but after 9 months back pain recurred, and *x*-ray examination of the lumbar spine and pelvis showed the secondary deposits to have increased in number and size in all areas. When last heard of he had been admitted to a local hospital on account of retention of urine.

*Case 5.*—Aged 70; first seen in Nov., 1942. Suprapubic cystotomy has been performed one month previously on account of acute retention. The general condition was fairly good. Haemoglobin value and blood picture were normal. The prostate was hard and moderately enlarged, with an ill-defined margin on the right. There were firm enlarged lymph nodes in both groins, with oedema of the lower limbs. Biopsy of the prostate showed an adenocarcinoma. *X*-ray examination of pelvis and spine revealed advanced osteitis deformans but no definite evidence of secondary deposits. The initial phosphatase values were: acid phosphatase 37 units, alkaline phosphatase 25 units. A total of 34 mg. of stilboestrol was given by intramuscular injection in 28 days, and thereafter 1 mg. t.i.d. by mouth. No change was detected in this case for 4 months, when some urine was passed per urethram (for the first time since the beginning of treatment). The prostate was slightly smaller and softer, but the change was not marked. At the end of 6 months the inguinal nodes were smaller. One year after the beginning of treatment this condition was maintained.

*Case 6.*—Aged 60; when first seen in April, 1941, complained of frequency of micturition. The general condition was good, with haemoglobin level and blood picture normal. Rectal examination showed a prostate of normal size, although possibly firmer than is usual, and with a suggestion of ill-defined borders. *X*-ray examination of the pelvis suggested secondary deposits. Diagnosis at this time was uncertain. In Sept., 1941, a biopsy of the prostate showed a columnar-cell adenocarcinoma. The plasma acid phosphatase was 17 units. The condition remained stationary for some 18 months under treatment with triphenylchlorethylene (see Haddow *et al.*, 1944), when generalized pain in the chest developed. *X*-ray examination showed multiple osteoplastic deposits in ribs, spine, pelvis, humeri, and femora. Stilboestrol was first given in March, 1943, in doses of 5 mg. t.i.d. orally. This was later reduced to 10 mg. daily. In 2 months pain in the chest was much less troublesome and has remained so. The prostate has gradually become softer and smaller, although there is still lack of definition of the right lateral border.

*Case 7.*—Aged 71; when first seen in Jan., 1943, complained of backache for 4 months and frequency and slowing of the urinary stream for 2 months. The general condition was good. A hard nodular mass continuous with the right lobe of the prostate was detected by rectal examination. A freely mobile firm lymph node was present in the left groin and was excised. Section showed a highly cellular carcinoma, the appearances being consistent with a metastatic deposit from a primary prostatic carcinoma. *X*-ray examination of the pelvis revealed osteitis deformans but no secondary deposits. The initial acid phosphatase level was 2 units. A total of 117 mg. of stilboestrol was given intramuscularly in 4 weeks. After 2 weeks slight regression of the prostatic tumour was thought to have taken place. Backache had disappeared in 1 month. No further observations could be made, as the patient died at his home 2 months after treatment began.

*Case 8.*—Aged 37; first seen in Aug., 1942, when he complained of frequency and incontinence of urine for 5 months and intermittent haematuria for 5 weeks. The general condition was fair. The prostate was enlarged and hard. A clinical diagnosis of carcinoma of the prostate was made and a course of high-voltage therapy given in Aug. and Sept., 1942. In Feb., 1943, the patient was readmitted complaining of diarrhoea and anorexia. The general condition was now poor. A large and indurated prostate projected into the rectum, causing partial occlusion and spreading laterally into the pelvis. The lower abdomen was filled by a hard mass. Punch biopsy of the prostate showed a well-differentiated carcinoma. *X*-ray examination of the pelvis revealed no secondary deposits. The plasma acid phosphatase value was 1.3 units. A total of 45 mg. of stilboestrol was given by intramuscular injection in 4 weeks. Within 12 days there was a slight palpable decrease in the size of the prostate, but apart from this the general condition deteriorated rapidly. The patient died 2 weeks later. Necropsy was not performed.

*Case 9.*—Aged 77; first seen in Dec., 1942, complaining of frequency of micturition and haematuria. The general condition was good. The prostate was indurated, with extension to the right pelvic wall. *X*-ray examination of the pelvis showed no abnormality. A course of high-voltage therapy was given in Jan., 1943. By July, 1943, the prostate was still hard and fixed and enlarged to the right. The plasma phosphatase values were: acid phosphatase 2.9 units, alkaline phosphatase 5.5 units. Stilboestrol dipropionate was administered from the end of July, 1943, in doses of 5 mg. daily by mouth. After one month frequency was less, but no change was observed on rectal examination. This was the condition when the patient was last seen in March, 1944.

*Case 10.*—Aged 61; first seen in Sept., 1942. A suprapubic cystostomy had been performed elsewhere 20 months previously. The general condition was good. On rectal palpation the prostate was found to be enlarged and extremely hard. A clinical diagnosis of carcinoma of the prostate was made, and a course of high-voltage therapy given in Nov. and Dec., 1942. *X*-ray examination of the pelvis was normal. By Aug., 1943, there was little change in the size and consistency of the prostate. Radiographs showed an abnormal opacity in the left ischium, but plasma phosphatase values were now: acid phosphatase 1.2 units, alkaline phosphatase 8 units. Stilboestrol was given in doses of 5 mg. b.d. orally. On re-examination at monthly intervals the condition remained unchanged.

### Discussion of Clinical Results

Palpable changes in the prostate were not produced in all cases. In Cases 1 and 2, in which the original condition was that of an enlarged hard nodular gland, both softening and shrinkage took place, the changes being well marked. The same type of alteration occurred in Cases 5 and 6, but to a less striking degree. No change whatever took place in Case 8—in which the disease rapidly proved fatal—and the findings were equivocal in Case 7. The remaining patients (Cases 3, 4, 9, and 10) had all been treated by high-voltage therapy previously, and in them no definite alteration in the prostate was detected. Hence of the 10 cases only 4 have so far shown definite regression of the primary tumour.

Palpable lymphatic spread was present in 3 of the series (Cases 1, 4, and 5), in each instance with an attendant swelling of the lower limbs. In all three cases a regression of the secondary masses took place, together with a reduction in the oedema.

Metastases to bone, in all 5 cases in which they occurred, were of the osteoplastic type. The appearance of radiographs taken at three-monthly intervals showed in some cases a progressive increase in density, while in others the deposits seemed to become more numerous during treatment, or increased in size.

Pain referable to bone occurred as a symptom in 4 of the series. In 3 cases it was a presenting symptom, while in the fourth it arose after the patient had been attending hospital for 2 years but before there was radiographic evidence of skeletal deposits. It was noted that some amelioration of such pain occurred in hospital with rest alone. Final assessment of the influence of stilboestrol on such pain is therefore best made when the patient returns to his normal routine. These four cases all secured a partial or complete relief from pain, and this has so far been maintained in three of them.

With the exception of Case 8 all showed some measure of betterment in general condition. This revealed itself in an improvement in appetite, a gain in weight, and, in the two cases with severe anaemia, by a gradual increase in haemoglobin. At the onset of treatment the haemoglobin values were 46% in Case 2 and 37% in Case 3. It required between 5 and 6 months for the haemoglobin values to reach 78% and 72% respectively. As each patient was given ferrous sulphate during the earlier period of his treatment the part played by stilboestrol in bringing about this improvement is not known.

Of all the symptoms associated with carcinoma of the prostate, frequency of micturition is likely to be the most uncertain in its response to any form of therapy. Even if a shrinking and softening of the prostate takes place, the extent to which micturition returns to normal must depend finally upon the degree of secondary changes in the bladder. Clearly it is only rarely that these changes will be so slight as to allow of a return to normal function. On the whole there appeared to be some measure of improvement in all the cases in which frequency was a symptom.


### Summary

Details are provided of the method employed for estimation of acid phosphatase, and of the values obtained for plasma acid and alkaline phosphatase in various clinical conditions and in normal controls, and for acid phosphatase in seminal fluid. Two specimens of seminal fluid from a case of eunuchoidism contained relatively negligible amounts of acid phosphatase.

Of 10 cases of prostatic carcinoma, 6 showed a raised acid phosphatase content in the plasma: in 5 of these there was radiographic evidence of metastases in bone. Several of the results do not show any marked distinction between prostatic carcinoma with metastases and Paget's disease.

The behaviour of the plasma phosphatases, in cases of carcinoma of the prostate in which the plasma acid phosphatase was originally raised, was followed during treatment with stilboestrol. The response shows a uniformity of pattern, the acid phosphatase falling abruptly to a normal level, which is then maintained for considerable periods, with a rise in alkaline phosphatase followed by a gradual fall.

Of 10 cases of carcinoma of the prostate 4 showed some degree of regression of the primary tumour under treatment with stilboestrol, and secondary deposits in lymph nodes underwent regression in 3 cases. *X*-ray examination at 3-monthly intervals in those cases with metastasis to bone revealed in some a progressive increase in density, while in others the deposits became more numerous during treatment or increased in size.

With one exception all cases showed some measure of symptomatic and general improvement, in relief from pain, lessening of frequency of micturition, or gradual increase in haemoglobin level, and in improvement in appetite and gain in weight.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## MEDICAL EXPERIENCES IN NORTH AFRICA, 1943-4*


BY

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At the time of El Alamein the hospital sick rates, largely due to infective hepatitis, were at least as high as the battle casualties, and during the Sicilian campaign more men went down with malaria than from enemy action. In my experience at general hospitals in North Africa during almost exactly a year from the Tunisian fighting in March, 1943, till after the Anzio landing in 1944, hepatitis and malaria were again the two most serious medical problems. Bacillary dysentery was on the whole mild, and, though on occasion I had over 300 cases in hospital at a time, most of the men responded at once to sulphaguanidine, and were back on duty very quickly. The average stay in hospital was only ten days.

### Infective Hepatitis

Infective hepatitis was at its worst in the autumn months of 1943 and dropped rapidly with the frosts in Jan., 1944. It was a serious problem in the spring among both our own and enemy forces, and I had in hospital a number of German prisoners who had been still fighting while suffering from jaundice. During Oct., Nov., and Dec., 1943, there passed

* A lecture read to the Teheran Medical Association, June 24, 1944.

through my division of 1,100 beds well over 1,000 cases of infective hepatitis. This compared with just over 1,000 cases of respiratory diseases—mainly "coughs and colds"—some 600 cases of malaria, and an almost equal number of cases of dysentery. During the same period some 300 skin cases were admitted, and nearly 250 cases of faucial and skin diphtheria. These figures, of course, give only an idea of the work done at my own particular hospital near Algiers. Among all the cases of infective hepatitis there was not a single death. Though it was possible to discharge many from hospital, often after only 15 days, even while the skin was still yellow, in most cases the illness lasted considerably longer; at the same time, only two or three were really critically ill, and none required invaliding home.

The *prodromal period* was variable, the average time elapsing between the onset of symptoms and the appearance of jaundice being 5½ days. In some cases, however, this period was as long as three to four weeks, the longest occurring in a case in which the first signs of jaundice took 42 days to appear. A number of cases never showed jaundice at all, and these are perhaps the most interesting and the most important. We were able to make an almost certain diagnosis of hepatitis without jaundice in over 30 cases, and I have no doubt that many mild abortive cases occurred and remained unrecognized. The clinical picture is, however, often highly characteristic, with pyrexia, nausea, vomiting, constipation, and extreme anorexia, so that in an epidemic the suspicion of hepatitis should be at once aroused, though in such cases proof of the diagnosis may be impossible. Hepatitis without jaundice may well be a major cause of the spread of the disease, and some observers have made the guess that for every case with jaundice there is at least one without. When jaundice does develop, its appearance is often coincident with great general improvement in the symptoms, and if the serum bilirubin is estimated daily a rapid fall is usually found soon after, followed then by a much more gradual drop to normal levels.

Infective hepatitis is, at its onset, one of the important causes of "P.U.O."—sometimes resembling malaria, sometimes like typhoid, or sometimes with severe headache, rigors, and intense vomiting, even suggesting a meningitis. Just under 10% of my cases began with severe coryzal symptoms, and this mode of onset is recorded as occurring in over 30% of cases in other epidemics.

In some cases the *fever* may be only slight, but in others it is severe. *Constipation* occurred in 70% of my cases, while diarrhoea was present at the onset in 8%. It was an interesting observation, which may be of no significance at all, that several patients recorded attacks of severe and unexplained abdominal pain with vomiting lasting for one to two days, occurring almost exactly four weeks before the onset of their illness. Itching of the skin was very rare, but urticarial rashes occurred at the onset in four cases.

I can give no good indication as to the mode of infection. Though hepatitis is to some extent a wartime disease, there is not yet any clear proof of its mode of transmission. I have no doubt that droplet infection does not account for the whole story. In our hospital, where over 1,500 cases were nursed, the incidence among the staff of the medical division was *nil*. The only members of the unit as a whole (about 300 in number) who contracted the disease were the theatre sister, one of the surgeons, two surgical medical officers, two operating-room assistants, three clerks, and four orderlies working in the surgical wards. I could not help having a suspicion that actual contact with blood had some causal relationship in these cases, and the transmission of hepatitis by blood transmission, as well as by infected syringes, would suggest this as a possibility.

Many interesting tests have shown that the virus of infective hepatitis in blood is able to survive most simple measures of disinfection, and that nothing short of careful boiling of syringes, for example, is effective in preventing possible transmission by such procedures as intravenous therapy. Here traces of blood drawn into the syringe at a first injection may subsequently be injected with the next and thus infect the patient. This accounts for at least some of the cases of "arsenical" jaundice in syphilitics, in which the cause is not in fact the arsenic but the virus given with it. In some clinics with imperfect sterilization the incidence of jaundice has been as high as 40 to 50%, and in these cases the incubation period has seemed to be about 100 days; a similar period has been suggested from a study of cases of jaundice following serial blood-sedimentation-rate tests.

*Inoculation* of animals and human volunteers has not yet given conclusive results. Canaries, pigs, and other animals have been tried without success, but suggestive experiments in man have indicated that blood, duodenal juice, and faeces probably contain the virus up to some time after the appearance of jaundice. It has, of course, been the hepatitis virus in the serum—either given for treatment or used for the preparation of vaccines—which has been responsible for the occurrence of jaundice following inoculations of convalescent serum for measles and mumps and of yellow fever vaccine, after which over 28,000 cases occurred in the American Army in 1942: here again the incubation period varied between 40 and 150 days.

Among my own cases the *incubation period*, so far as I can judge, seemed to be from 21 to 28 days, though others have thought it to be as long as 6 to 12 weeks.

In one interesting incident two officers admitted to my division under Major Keele, R.A.M.C., had escaped from a P.O.W. camp in Italy, and had wandered for several weeks in the countryside, keeping hidden and avoiding all contacts with human beings, barely even meeting or speaking to a soul. Their only real contact during this time had been on Nov. 10, when they were joined for one night by a partisan who was feeling ill and for warmth slept between them in a barn. They noticed that he looked a little yellow when he left them in the morning, and exactly 22 and 23 days later respectively the two officers went sick with infective hepatitis.

There is no definite proof yet of *transmission* by faeces-contaminated food or water, or of any insect vector, and flies, fleas, and bed-bugs have not yet been incriminated. Officers in general show a higher incidence of hepatitis than do other ranks—this was so in my cases—and it has been suggested that this is because officers' mess kitchens have more flies than anywhere else, though not, I think, that officers have more bed-bugs than other ranks!

*Treatment.*—Though I feel confident that it will not be very long before the mode of transmission of infective hepatitis is demonstrated and that prevention may then soon follow, I am more doubtful how far successful treatment of the established disease is likely to result. Up to now the hoped-for benefits from the administration of cystine, methionine, casein digests, choline, or other amino-acids have not developed, though at least it seems certain that adequate protein as well as carbohydrate is important during and after the illness. Restriction of diet may be necessary symptomatically owing to anorexia and nausea, but as soon as possible full allowance of all constituents in the diet, including protein and fats, is, in my opinion, advisable.

## Malaria

Nothing surprised me more about malaria in North Africa than its difference from malaria in West Africa. In North Africa we saw both benign tertian and malignant tertian. There were many relapse cases—some severe, persistent, and resistant to treatment—but in over 1,000 patients admitted to my division there was not a single death. This was certainly better than in West Africa, where I had one death from cerebral malaria and one from blackwater fever in roughly the same number of cases, but for clinical severity the M.T. malaria of North Africa was unquestionably the more alarming. In North Africa the condition was more polysymptomatic, the need for treatment more urgent, and the response often less satisfactory: here intravenous quinine injections became a frequent and almost usual procedure, while in West Africa it was rare. During the malaria season over 1,000 injections were given in my hospital with only minor symptoms on two or three occasions. This timely intravenous quinine no doubt saved many lives among desperate cases, even though a considerable number would almost certainly have recovered with oral treatment alone. Of the many well-known and important lessons about malaria—often learnt, perhaps, at a price—these were some that we learnt once more in North Africa.

1. In a malarious country headache is not to be regarded as due to psychoneurosis until malaria has been excluded.

2. Malaria with low fever may be more dangerous than with high, because it is more easily missed.

3. To wait for a positive blood slide or a palpable spleen costs more lives than to treat a suspicious case on an unproved diagnosis.

4. The exact date of onset of malaria is not the same thing as the date of admission to a medical unit: where a man lives may be much more important than what he does.

5. To transfer a case of active malaria without treatment and without full precautions for continuation of treatment is a medical crime.

6. Other diseases do not exclude malaria; and malaria, especially relapsing malaria, has often some complicating disease.

7. Diarrhoea with blood and fever is not always due to dysentery; jaundice with fever is not always infective hepatitis: malaria may mimic both. Asthma, fibrositis, neuritis, urticaria, and nephritis are only some of the less-well-recognized conditions that malaria may cause, while it may simulate at least a dozen others.

### Diphtheria

Both in the Middle East and in North Africa, faucial, nasal, and cutaneous diphtheria were important causes of sickness, prolonged stay in hospital, serious complications, and deaths.

The diagnosis of *faucial diphtheria* was, as always, easily missed, and a number of cases appeared clinically to be merely simple quinsy or tonsillitis with no definite membrane that could be seen. Among my own unselected cases the incidence of complications was low—only 5%; out of 35 cases with complications 16 showed peripheral neuritis, the average time of onset being 6½ weeks from the time of the sore throat. One faucial case ended fatally; this in spite of receiving 216,000 units of serum within the first three days of the infection. The average dose of serum used in throat cases was 85,000 units; but the complicated cases, on analysis, were found to have had serum considerably later in the disease than the uncomplicated. Massive dosage seemed in these cases to be undoubtedly less important than *early* dosage—at least in preventing complications. One-fifth of all the cases showing complications received no serum at all, and among uncomplicated cases 56% received serum within the first two days of their illness, as compared with only 29% among the complicated cases.

*Cutaneous diphtheria* is a most interesting and important condition. In my own cases it was not always possible, for various reasons, to distinguish between skin lesions infected with avirulent organisms and those infected with true *C. diphtheriae*. An analysis of over 76 lesions from which organisms morphologically resembling *C. diphtheriae* were cultured gives some interesting findings. Only a few of the lesions show characteristic features: they may be in the form of ulcers, superficial weeping or crusting "dermatitis," or purulent infections of wounds, abrasions, burns, or superficial injuries. They all show a notable chronicity and failure to heal; the average duration of the cases before diagnosis was 50 days and the average stay in hospital before healing 35 days. Of the lesions 40% were on the legs, 25% on face or ears, only 10% on hands or arms, and the remaining 25% either generalized over the body or on isolated parts such as scrotum, groin, or buttock. The lesions were frequently multiple, in one case as many as 31 separate ulcers, varying in size from 1 in. to 3 in. in diameter, being present all over the body.

Diphtheritic ulceration sometimes shows a black crust or slough which leaves a bleeding surface if removed, and these cases often clear up rapidly and completely after injection of quite small doses of serum such as 24,000 units. The chronic desert sores so common in the Middle East and North Africa are more common on hands and arms, and rarely show the dark crusting of diphtheritic ulceration; seborrhoeic or eczematous lesions present few characteristic signs when infected with *C. diphtheriae*.

*Complications.*—In 12 of my cases there was coincident infection of skin and of the throat or nose, and in 9 of these the skin infection definitely preceded that of the throat or nose. Auto-infection from "hand to mouth" thus appeared to be a frequent occurrence, arising in approximately 10% of the cases, though the reverse process—from nose or throat to skin—can also, of course, occur. The virulence of the organisms could not always be tested; but infection of ward personnel is an appreciable risk, one sister and one orderly in the skin wards contracting faucial and the medical officer in charge contracting a cutaneous diphtheria. The incidence of complications, too, is not low—probably due, in part, to the long time-interval often elapsing between infection and recognition of the organism. Five proved cases showed complications, 2 patients died, and 19 cases of polyneuritis were almost certainly due to skin diphtheria, though they were not proved bacteriologically. These cases were, however, too selected to afford an accurate estimate of the percentage incidence of complications, which probably lay between 5% and 10% of all cases.

The lesions associated with complications were in the main large, and involved soft tissues; both deaths occurred in patients with extensive infection in regions with considerable areolar tissue—buttock and neck. In the first of these, infection apparently arose spontaneously as a boil on the buttock, which rapidly developed into an abscess and was incised. No suspicion of diphtheritic infection was aroused and, of course, no serum was given. The patient was first seen on the 34th day of the lesion, when a marked triple rhythm was heard at the apex of the heart and the pulse rate was persistently rapid—100 to 120; I at once suspected a diphtheritic myocarditis, and cultures of the abscess showed *C. diphtheriae*. On the 36th day diplopia developed, and 12 days later a palatal palsy and peripheral neuritis of arms and legs. Death occurred on the 60th day, post-mortem examination showing an intense toxic degeneration of the heart muscle. The second patient showed similar changes at necropsy, death occurring on the 43rd day of illness. In this case a long-standing seborrhoeic dermatitis was secondarily infected with *C. diphtheriae*, and an extensive brawny cellulitis of the neck developed, from which the organisms were cultured.

Severe polyneuritis following chronic cutaneous ulceration was often seen, though some cases showed only paraesthesiae, loss of reflexes, and very slight weakness. In most cases the polyneuritic symptoms began between 6 and 10 weeks after the skin lesions were noticed; a typical case history is as follows:

*Pte. M.*, aged 37. Whitlow on right toe noticed Nov. 18; incised Nov. 22. Small ulcer formed with black adherent slough—resistant to treatment. Dec. 18: Ulcer swab showed *C. diphtheriae*; 32,000 units antidiphtheritic serum given. Jan. 1: Ulcer healed. Jan. 20: Blurring of vision; further 32,000 units given. Jan. 28: Paraesthesiae of hands and legs noticed. Feb. 20: Gross paralysis of both legs, with loss of reflexes; arms weak; marked loss of sensation. Heart good. Skin lesions healed. Routine throat and nose swabs negative for *C. diphtheriae* throughout.

### Peripheral Neuritis

Peripheral neuritis occurred relatively often in North Africa, either as a symmetrical polyneuritis or as isolated individual lesions, such as winged scapula, foot-drop, or a brachial neuritis. Many cases undoubtedly followed skin diphtheria. Some seemed to be due to malaria or dysentery; in others treatment with such drugs as emetine possibly played a part. Cases of sudden acute infective polyneuritis also occurred, often resembling poliomyelitis, but with gross sensory changes. This disease was also seen in the war of 1914–18. In North Africa it began with severe backache, headache, and fever; weakness and sensory loss in the limbs, both proximal and distal, appeared within a few days or a week. It is interesting that German writers (Wilke, 1944) report a high incidence of polyneuritis among their troops on the Russian front, similarly involving muscles such as serrati, deltoid, or quadriceps, as well as peripheral types, and attribute the conditions almost entirely to infection with the Flexner or Shiga-Kruse bacillus. Though this is certainly a cause in some cases, it is doubtful whether it is quite as frequent as they maintain.

### Immersion Foot

Most of the men coming to my hospital for trench or immersion foot had not had their boots off for over 10 days, having been forced, as at the Sangro River, to remain almost stationary in mud and rain for many days owing to constant shelling.

In immersion foot the initial signs are of coldness of the foot and leg, followed by hyperaemia and severe oedema, with loss of most forms of skin sensation. It is vital not to provoke

hyperaemia by warming the leg up in any way; the worst cases occurred among those who, against instructions, had put their feet by a fire as soon as they took off their boots. The damage caused by the wet and chill leads to stagnation of the circulation and then hyperaemia, with oozing of fluid from the capillaries and diminished vitality of nerves, skin, and muscle; in severe cases irreparable loss of function may result, but in the milder cases the tingling, pains, and oedema subside in one or two weeks. The hyperaemic stage may last many weeks with sometimes intense hyperaesthesia, but in most of my cases full recovery occurred within 6 weeks. In some men there had been a lifelong tendency to cold hands or feet; and in the worst cases lasting sequelae, including hyperhidrosis and extreme sensitivity to cold, may persist.

As a rule immersion for periods of many days is necessary to produce symptoms, as has been the case with numbers of men torpedoed at sea and remaining afloat for a long time in open boats; but sometimes minor degrees follow shorter periods. This occurred, for example, in the case of an officer who fell into the sea during the glider landings in Sicily and had to stand in the water hidden under a cliff for about 10 hours, after which he walked some 18 miles in a hot sun; later his feet swelled and became anaesthetic—symptoms which still persisted when I saw him 8 days later.

No specific treatment was given, but strict avoidance of any artificial heat, as by hot-water bottles, was essential, and cooling by fans has often been adopted. Careful Buerger's exercises seemed to do good.

### Anxiety States

In the fighting in North Africa, as in other theatres, many acute anxiety states and conditions of severe physical exhaustion or terror occurred, as well as gross sensory and motor manifestations of hysteria. Few things in the future may be of more far-reaching importance than the development of personnel selection and the attempt to prevent psychological breakdowns under stress and strain. How far the art of selection of men and women may go in education, industry, or social life no one can foretell, but war psychiatry has certainly shown the way in its insistence upon the testing of a man's personality and intelligence, as well as his physique, before choosing him for any special appointment.

To me, however, it was almost more remarkable to see, not how many men broke down in battle, but how much the human mind and body were able to stand without collapse. A soldier lay under a truck with his friend while being bombed; his friend crawled half out to look around, and when, a little later, the first man pulled him back, his head had completely disappeared. Is it surprising that the survivor developed an intense hysterical blindness?

Most breakdowns at or near the battle-front occurred in the psychologically predisposed, and it should therefore be possible to some extent to detect the mentally unfit by careful selection before they get so far. War is teaching us more and more just how much we are able to select and judge in advance, and just how near the real thing methods of trial and training have got to be before we can eliminate early the psychologically unfit.


Reference

Wilke (1944), *Trop. Dis. Bull.*, **41**, 131.


The *Housing Manual, 1944* (H.M. Stationery Office; 2s.), which has been prepared by the Ministry of Health and the Ministry of Works and sent to all local authorities in England and Wales, gives technical guidance to local authorities, architects, builders, manufacturers, and others on the lay-out, planning, construction, and equipment of permanent houses to be built under the Government short-term housing programme covering the first two years after the end of the war in Europe. In the light of this technical guidance local authorities will now prepare their own plans. In general, the standards recommended are those proposed by the Design of Dwellings Subcommittee of the Minister of Health's Central Housing Advisory Committee (the Dudley Report). The ground covered in detail by the manual includes: Site planning and lay-out, plans of houses and flats, plans for special occupants—e.g., old people—efficiency in building, new materials and methods, services and equipment. The great majority of houses built by local authorities under the short-term programme are likely to be of the three-bedroom type.

# ANALGESIA IN LABOUR

## A RECORD OF 102 CASES TREATED WITH PETHIDINE


BY

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It is now nearly a century since Simpson discovered the use of chloroform as an anaesthetic and advocated it as an analgesic in labour. At that time there was a public outcry against any drug being used for the relief of labour pains, and it was only, one might say, by a Royal Warrant, that chloroform was accepted as an analgesic in labour. Times have changed, and there is now a growing tendency in this country for the expectant mother almost to demand that her doctor arrange that she should not feel pain during her delivery. In the United States of America this public demand has been so great that the use of analgesics in labour has been considered one of the causes of the high maternal mortality and morbidity rates from which that country suffered some years ago, as uterine contractions were interfered with to such an extent that operative deliveries were very often required. Since Simpson's advocacy of chloroform many other drugs have been tried, and up to now, though each has had its advocates, none has been found acceptable to all authorities; this is because the ideal analgesic has not yet been discovered. In 1906 Gauss, in Freiburg, advocated "twilight sleep,"—with a combination of morphine and hyoscine—and, though this was widely used for a number of years, reports of its apparent bad effect on the baby came from different sources, and for this reason it fell into partial disuse. We doubt, however, if all the allegations against twilight sleep are true, for it is common knowledge that not every baby cries immediately it is delivered; but if twilight sleep was used and the babe was a little difficult to bring round after birth, this was immediately attributed to the analgesic. Series of cases have been reported from Edinburgh (Johnstone, 1917; Haultain, 1920–1; Greenwood and Hirschman, 1922) and elsewhere (*Proc. roy. Soc. Med.*, 1918) of excellent results with twilight sleep in the accomplishment of amnesia and analgesia without any really bad effect on the baby. As with many other treatments, there is a right and many a wrong way of administration, and if the correct rules as formulated by Gauss are observed, then the results, in our opinion, are good, whereas if they are departed from accidents may occur, and with twilight sleep it is the baby who may suffer. There is little doubt that if twilight sleep is employed properly it is a most useful and safe analgesic in the long tedious labour.

Nearly 20 years after Gauss's discovery Gwathmey (Gwathmey *et al.*, 1923) described his synergistic method, but though it has its advocates it has never found much favour in this country. In 1924 a barbiturate—somnifène (Cleisz, 1924)—was first tried in labour as an analgesic, and since that time a large number of derivatives of barbituric acid have been used, especially in the United States of America (Gould and Hirst, 1935), and each separate hospital and clinic which was visited there in 1939 seemed to be enthusiastic over its own special barbiturate, or combination; but this enthusiasm was usually confined to its sponsors, and was not shared by other hospitals.

### Conditions for the Ideal Analgesic

A most comprehensive treatise on the relief of pain in labour was read before the eleventh British Congress of Obstetrics and Gynaecology by Sturrock (1939), showing, as well as does this short preamble, that the ideal analgesic in labour has still to make its appearance. That being so, one is always on the look out for any new preparation that might fulfil the conditions essential for the ideal analgesic. These conditions may be summarized as follows:

1. That the analgesic does not endanger the life of the mother or have any harmful effect upon her.
2. That it does not harm the child.

3. That the strength of the uterine pains are not diminished by its administration and that labour is not delayed by its use.

4. That there is no effect on the expected co-operation of the patient in the second stage of labour, and that operative intervention is not increased by its use.

5. That the third stage of labour is not prolonged after its use, nor is there any undue tendency to post-partum haemorrhage.

6. That the analgesic is easy to give and that no risks are associated with its administration.

7. That the analgesic is always successful in its action.

This standard is indeed a high one, but the perfect analgesic should fulfil all these conditions.

It was with great interest, therefore, that we learnt that a new analgesic had been discovered in 1939—namely, pethidine hydrochloride—and that it was found by various scientific workers to have an analgesic effect comparable to morphine and also to have a spasmolytic and sedative effect as well. On account of these properties there seemed to be a good chance that this analgesic might prove to be of great value during labour and might even approach the ideal. It was thus with some gratification that we were afforded liberal supplies of pethidine hydrochloride with which to carry out a preliminary investigation on its action in labour.

It would be superfluous to go into the chemistry and pharmacology of pethidine, as this has already been done adequately by Gallen and Prescott (1944), who also published their results in a series of 150 obstetrical cases; and Spitzer (1944) recorded his results in a series of 80 cases, the drug being given entirely by mouth in his series, whereas it was administered chiefly intramuscularly in the former. Previous to this, several observers in America (Gilbert and Dixon, 1943; Roby and Schumann, 1943; Schumann, 1944) had reported promising results of its analgesic action in labour; but as it is only by means of different series of results published by several observers that the full value of a drug can be assessed, we make no apology for adding a further account of the use of pethidine in 102 cases in which it was given intramuscularly during labour.

In this series 91 of the women were primigravidae and 11 multiparae, all having been admitted under our charge during a period of eight months; each was observed carefully by one of us, who made notes regarding the strength of the pains and the dilatation of the cervix, and decided when pethidine injections should be started and when further doses were required. After labour each case was assessed not only by a consideration of the observations made but also by conversation with the patient, so as to discover her evaluation and appreciation of the drug.

### Dosage of Pethidine Hydrochloride

The first dose of 100 mg. was usually given intramuscularly when the os was 3 to 4 fingers dilated and the pains were coming on about every four to five minutes. The second dose of 100 mg., when required, was given 45 to 60 minutes later. In all, 44 cases received one injection and 40 two injections. A third injection of 100 mg. was necessary two hours later in 10 cases, and a fourth after another two hours in 2 cases. Pethidine was combined with hyoscine—gr. 1/150 with the first injection and gr. 1/450 with each succeeding injection in 6 cases.

### Effect on the Mother

Of the primiparous patients 66 had normal spontaneous labours, whereas 22 babies were delivered by forceps and 4 by the breech (Table I). This would seem to be a high forceps rate (21.6%), but it can be explained by the fact that the patients were primigravidae, and also that the hospital where the investigation was carried out

TABLE I.—*Deliveries*

| Primiparae (91) | | | Multiparae (11) | | |
|---|---|---|---|---|---|
| Spont. | Forceps | Breech | Spont. | Forceps | Breech |
| 66 | 22* | 4* | 10 | 1 | Nil |

* One patient was delivered of twins.

takes practically all the emergency and difficult cases from the vicinity, and therefore the average forceps rate for all cases is always inclined to be high (13.6% for 1941). Among these 22 cases the forceps were indicated for occipito-posterior positions in 9 cases, for contracted pelvis in 3 cases, and for deep transverse arrest of the head in 1 case. In 4 cases forceps were applied to lift the head over the perineum, and in 5 for maternal or foetal distress. Among the multiparae 10 had normal deliveries and 1 was delivered by forceps for an occipito-posterior position.

In only 2 cases did the mother present any abnormality after delivery; 1 had a slight post-partum haemorrhage, and 1 suffered from marked tachycardia, which came on 30 minutes after labour and lasted for several hours. The latter patient had 4 doses of pethidine, the final dose being given 4½ hours before a difficult forceps delivery for an occipito-posterior position. There was no maternal mortality, and none of the patients suffered any toxic effects from the injections either during labour or subsequently. Thus it can be stated that, from this series, conditions 1 and 5 for an ideal analgesic, mentioned above, have been fulfilled, but that the fulfilment of condition 4 is doubtful.

### Effect on Child

As regards the effect on the infant, there were no stillbirths in the 103 babies born (Table II). In only 4 cases was there any marked asphyxia: in two of them the asphyxia could be accounted for by a difficult forceps delivery, in one to eclampsia and a forceps delivery, and in another to the cord being held tightly round the baby's neck; all these babies responded to treatment and survived without giving any further cause for anxiety. In 22 cases the child did not cry immediately on delivery but responded in a few minutes; in only 8 of these cases was there no other possible reason found for the slight oligopnoea. None of these babies gave any cause for anxiety at birth or later. Thus it can be stated quite definitely from this series of cases, which includes many complications that might have caused asphyxia and possibly stillbirth, that pethidine had no deleterious effect on the infant; condition 2 was therefore fulfilled.

TABLE II.—*Effect on Babies*

| Cried on Delivery | Sl. Oligopnoea | Asphyxia | Total | Mortality |
|---|---|---|---|---|
| 77 (1 set of twins) | 22 | 4 | 103 | Nil |

### Effect on Labour Pains

With regard to its effect on labour pains, the administration of pethidine would seem definitely to have hastened delivery in 33 cases (Table III), the average time from the first dose to delivery in these

TABLE III.—*Acceleration of Labour (33 Cases)*

| | | | |
|---|---|---|---|
| Primiparae .. .. .. | 25 | Multiparae .. .. .. | 8 |

being 2.6 hours. The clinical explanation for this effect seemed to be that the "edge" was taken off the pains, thus allowing them to be more effective and the patient to co-operate more easily in the second stage of labour; these were the statements that we obtained from interrogation of many of the patients, given quite on their own initiative without any prompting or suggestions by us. To these views of the patients themselves might be added another—namely, that the injections seemed in many cases to relieve spasm of the cervix and to enhance uterine polarity. The cervix therefore dilated more easily and the uterine contractions seemed to be accentuated, but were not so painful. On the other hand, the pains stopped in 9 cases, and in some of these did not return for several hours, the patient having apparently gone completely out of labour, even when she had evidently been in good labour previously. This was probably due to pethidine being given before the os was dilated sufficiently (2 to 3 fingers), but it is interesting to note as well that 6 out of the 9 cases had some abnormality present: 1 was a breech, 2 were occipito-posterior positions, 2 had contracted pelves, and 1 was a case of twins. Therefore there might have been some disharmony of uterine action, as tends to happen in such cases. On the other hand, such abnormalities occurred in successful cases when pethidine was given with the cervix slightly more dilated, and the uterine contractions were not interfered with in any way. In a few cases uterine contractions did not seem to be affected by the drug, although in most there was some improvement in the efficacy of uterine action. Thus condition 3 is not invariably fulfilled, although it usually is, especially when no abnormality is present.

### Analgesic Effect

The analgesic effect of pethidine was assessed under four separate headings:

(i) *Good.*—The result was considered good if pain was relieved, the contractions regular and efficient, dilatation of the cervix quick, and the patient rested well (usually slept) between the pains. (Amnesia was not an expected result with pethidine alone, and though it was obtained in some cases it was not considered as an essential to be achieved.)

(ii) *Satisfactory.*—The analgesia was considered satisfactory if the strength of the contractions was not interfered with, the cervix

dilated normally, and the patient rested well between pains which were bearable.

(iii) *Poor.*—Analgesia was considered poor when only slight analgesia was obtained and there was little rest between pains.

(iv) *Unsatisfactory.*—The result was considered to be unsatisfactory when the drug gave no benefit at all or caused the uterine contractions to cease.

Under these headings (Table IV) 47 results were considered to be good, 33 satisfactory, 11 poor, and 11 unsatisfactory. Thus 78.4% were definitely benefited by pethidine, and in 46.1% the result achieved was really good. Of the 47 cases classed as "good," 41 had spontaneous deliveries, 4 had occipito-posterior positions, 1 was a breech, and 1 a face presentation; only 4 of these patients required forceps. Among the 33 "satisfactory" cases 22 were spontaneous, 6 had occipito-posterior positions; 1 was a breech presentation; 1 had eclampsia; 1 had a contracted pelvis, and there was one set of twins; forceps were used in 10 cases. Among the 11 "poor" cases 8 were spontaneous, 1 had an occipito-posterior position, and 3 were delivered by the forceps. In the "unsatisfactory" cases, as previously detailed, 6 were normal.

TABLE IV.—*Analgesic Effect on Mother*

| | Cases | Prim. | Mult. | Spont. | Abnormal |
|---|---|---|---|---|---|
| Good .. .. | 47 | 40 | 7 | 42 | 5 |
| Satisfactory .. | 33 | 30 | 3 | 22 | 11 |
| Poor .. .. | 11 | 11 | 0 | 8 | 3 |
| Unsatisfactory .. | 11 | 10 | 1 | 5 | 6 |

## Dosage Required

With regard to dosage the figures in Table V would seem to show that one injection of pethidine is very often sufficient to produce a good result, but if it does not then a second injection, given about an hour later, is usually all that is required. Of the "good" and "satisfactory" cases 72 required only two injections at the most; on the other hand, in cases in which, for some reason or other, labour is slow, the effect may be continued by third and fourth injections.

TABLE V.—*Number of Injections Given*

| | Good | | | | Satisfactory | | | | Poor | | | | Unsatisfactory | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. of Injections | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Cases .. .. | 20 | 21 | 6 | — | 17 | 13 | 2 | 1 | 3 | 6 | 1 | 1 | 6 | 4 | 1 | — |

## Hyoscine and Pethidine Combination

Of the six cases which received hyoscine in addition, to try to produce a degree of amnesia as well as analgesia, two were classed as "good," one as "satisfactory," one as "poor, and two as "unsatisfactory." These cases were treated fairly early in the investigation, and as very little benefit seemed to result from the addition of hyoscine its use was not continued. Possibly, however, we were wrong in not giving hyoscine a more extended trial, as, theoretically, the addition of hyoscine should increase the benefit, and, as will be shown later, pethidine and hyoscine together would seem to be very efficacious in producing amnesia for Caesarean section performed under local anaesthesia.

## General Conclusions

Summing up the facts obtained from the treatment of these 102 patients with pethidine, we can state that the ideal analgesic drug for labour has not yet been found, but that pethidine fulfils the conditions quoted comparatively well. It has apparently no harmful effect on either mother or child; there is no tendency to produce post-partum haemorrhage; and it usually does not retard uterine contractions—in fact, in one-third of the cases it seemed to enhance uterine action appreciably. It is not always successful in producing analgesia, but it did so in enough cases (78.4%) to make it a valuable drug to use in labour. Its administration involves no difficult routine, any slight deviation from which might be dangerous, as is so definitely the case with twilight sleep. It is possible that the forceps rate is slightly increased by its use.

In comparison with twilight sleep, analgesia is obtained in approximately the same number of cases as those quoted by observers of that form of treatment, but twilight sleep has the advantage in that it produces amnesia as well in a larger proportion of cases; the forceps rate is, however, higher with twilight sleep owing to the fact that the co-operation of the patient in the second stage of labour is not so satisfactory as with pethidine.

There is apparently no undue excitability under pethidine such as may occur with twilight sleep or the barbiturates.

## Premedication with Pethidine and Hyoscine

For a number of years one of us (W. F. T. H.) has been trying to find a really efficient drug or combination of drugs to employ in the premedication of a patient before carrying out a Caesarean section under local anaesthesia. Caesarean sections under local anaesthesia are associated with less risk than under a general anaesthetic, and for women suffering from cardiac lesions, pre-eclampsia, chest conditions, etc., it is certainly the ideal method. Under local anaesthesia the operation is as a rule most satisfactory provided the woman receives adequate premedication; but often patients awaiting a Caesarean section are very alert, being unduly excitable because of the immediate prospect of having a baby, and even strong doses of hypnotics and sedatives have not the usual effect. Premedication with morphine and hyoscine in the accepted dosage before an operation under local or spinal anaesthesia is contraindicated, as such a dose may have a bad effect on the baby, making it difficult to resuscitate, and in some cases might cause stillbirth. We considered, therefore, that pethidine and hyoscine should be given a trial in such cases, and up to now we have used it in 6 cases, with excellent results. 100 mg. of pethidine and 1/150 gr. of hyoscine are injected 45 minutes before the operation, and just before the patient is taken into the theatre she is given another 100 mg. of pethidine and 1/450 gr. of hyoscine. In all cases this premedication has acted well and analgesia and amnesia were perfect, the patient usually sleeping throughout the operation and remembering nothing about it when she woke up. In each case the baby cried as soon as it was delivered, and the uterus contracted down excellently, as it always does when local anaesthesia is being used alone. These cases may be just the "fortunate first" that often occur with any new therapy, but it would seem to be worth while to give this form of premedication an extended trial in such cases.

We desire to thank Messrs. Burroughs Wellcome for the supply of pethidine, and Messrs. Bayer Products Ltd. for the supply of dolantol—the two preparations used in this investigation. We also thank Sister Anderson and Sister Mackenzie, the day and the night labour ward sisters, for their great help and co-operation.

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# SPONTANEOUS LOBECTOMY

BY

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During recent years it has become increasingly difficult to differentiate between a lung abscess and an empyema. There is no doubt that in many cases the infection is primarily in the lung tissue and only secondarily invades the pleural cavity. This has given rise to the term "pleuro-pulmonary abscess." In the following case the infection was so great that a complete upper-lobe lung slough became free in an empyema cavity.

## Case Record

A man aged 43 was admitted to the General Infirmary at Leeds on Dec. 14, 1942, under the care of Mr. P. R. Allison. He gave the following history. On Oct. 17, 1942, he was seized with a sudden acute pain in the middle of the back while at work and rapidly developed a severe cough. He became so ill that he had to be taken home and put to bed. He was febrile, and on Oct. 20 was removed to a nursing home with a diagnosis of lobar pneumonia. A course of sulphapyridine was given: 2 g. stat. and 1 g. four-hourly

for 48 hours, and then 0.5 g. four-hourly for 24 hours—a total of 17 g. in 3 days. His temperature fell to normal on the second day, and on Nov. 3 he was discharged apparently cured.

The man improved for about a fortnight; then his cough returned with added severity and he brought up much foul-smelling greenish-yellow sputum. Cough was his main symptom at this time. Vomiting occurred on several occasions, and his cough became almost incessant. A noticeable feature was that the cough was made worse by movement: he was more free from the paroxysms of coughing when supine than when in an upright position. His temperature varied from 99° to 101°, and clinical examination on Dec. 8 showed that there was an effusion at the right apex. *X*-ray examination on Dec. 10 confirmed this. Aspiration of the right chest in the sixth interspace in the mid-axillary line produced pus which on culture gave a profuse nearly pure growth of *B. friedländeri*. The patient was admitted as a case of post-pneumonic empyema on Dec. 14: temperature 99.6°, pulse 84, and respirations 26.

*Operation Notes.*—Premedication consisted of morphine gr. 1/4, atropine gr. 1/100, and scopolamine gr. 1/150. The skin and subcutaneous tissue in the right upper chest were infiltrated with 0.5% planocaine, and aspiration of the chest in the sixth interspace in the mid-axillary line produced pus. A portion of the sixth rib was removed and the parietal pleura was opened. A large apical cavity was entered and 45 oz. of thick green pus was withdrawn. During a violent fit of coughing a slough of the whole of the right upper lobe was expelled from the wound, being followed by a gush of foul-smelling pus. A large drainage-tube was inserted into the cavity, and the skin lightly sutured and a light dressing applied. The lung slough measured 20 by 8 by 6 cm. It had a grey ragged appearance and was pitted with small holes.

*Post-operative Progress.*—On return from the theatre the patient's general condition was good: temperature 99.6°, pulse 96, and respirations 32. Cough, which was spasmodic, was relieved with linctus heroin 2 dr. t.d.s. Drainage was profuse, and his temperature, pulse, and respirations reached normal levels on the third post-operative day. *X*-ray examination at this time showed that the tube was in good position and that there was no fluid level in the cavity. Satisfactory progress was maintained, and on Dec. 22 a thoracoscope was passed into the cavity. Clean pink pleura could be seen all round except on the lower and posterior part, where the dappled surface of the lower and middle lobes could be made out. The root structures were plainly visible, and at least three large bronchial openings could be seen. There was a polypoidal projection from what seemed to be the pulmonary artery, which was presumably organizing blood-clot.

Convalescence continued to be satisfactory and drainage gradually decreased. Apart from a slight morning cough the patient was now entirely free. On Jan. 23, 1943, he was allowed to get up, and on Feb. 19 was discharged from the hospital with a self-retaining catheter in position in the cavity. The tube was changed frequently, and *x*-ray examinations were made at intervals of about three weeks. The tube was finally removed on June 2, and the sinus rapidly closed. *X*-ray examination showed that there was then still a cavity at the right apex, with at least one patent bronchus at its lower end. The patient is now (June 20) quite well, free from cough and dyspnoea, is gaining weight, and has started work.

### Comment

The illness began with an attack of lobar pneumonia, which was followed by a period of recovery. This was interrupted by the appearance of excessive cough, which was productive of thick greenish-yellow sputum, with attendant symptoms of malaise and pyrexia. Clinical examination some two months later suggested an empyema, and drainage was indicated. At this time the cough was noted to be positional: the patient coughed more when he was upright than when flat in bed. The presence of *B. friedländeri* in the pus from the cavity was a rare and unexpected finding. Removal of the tube six months after drainage was started still left a cavity in the right upper zone. This cavity is draining into a patent bronchus on its lower and medial aspect. Up to now the presence of a cavity has not given rise to any symptoms. The question of an apical thoracoplasty must, however, be kept in mind, so that the cavity may be closed completely if it should again give rise to any symptoms.

### Summary

One case of spontaneous lobectomy is described. The finding of a nearly pure culture of *B. friedländeri* in the pus from an empyema is noted as a rare event.

For permission to describe this case I have to thank Mr. P. R. Allison, under whose supervision it was while in hospital.

# Medical Memoranda

## "Spinning the Occipito-posterior"

In a fairly concentrated experience of obstetric practice (hospital, consulting, and private) spread over 25 years, at least 500 cases of occipito-posterior presentation, at a very moderate estimate, must have been treated (probably many more). During this period a method of treatment, feasible in a limited number of cases only, has been thrust upon me by Nature's own ordinance rather than by any skill or genius on my own part. I have termed this method, perhaps rather fancifully, "spinning the occipito-posterior."

The method depends upon the combination of several favourable circumstances, some of which are partly under medical control. These are as follows:

1. The membranes must be intact.
2. The head must not be absolutely jammed in the lower strait.
3. There must be at least two to three fingers dilatation.
4. There must be no disproportion between the head and the pelvis.
5. The attempt should be made within 24 hours (probably) of the onset of "painful contractions of poor quality" so characteristic of occipito-posterior presentations.

In such cases the usual approved method of treatment is by analgesics and psychological control of the patient.

There is an alternative. In the course of examination, to determine position and progress, a two-finger vaginal examination should, if possible, be made. With a knowledge of "intact membranes," the head may be pushed upwards, between pains, possibly half an inch or more into the cavity of the pelvis. The result is that liquor amnii can pass down on all sides of the head, so that, for practical purposes, it again floats in the lower part of the amniotic sac. Should the pressure upwards be timed to coincide with the onset of a contraction, the head will sometimes spin completely round to occipito-anterior practically instantaneously. Retaining this position by fundal pressure and promptly rupturing the membranes and letting off liquor will lead to a reasonably rapid and normal delivery.

It is obvious that this method has a limited application, but might possibly be used much more often if the necessary conditions were looked for and the attempt made.

Douglas A. Mitchell.
Bath. M.D.Lond., F.R.C.S.Ed., M.R.C.O.G.

## Fracture of the Neck of the Femur after Amputation

Fracture through the neck of the femur due to hyperaemic decalcification—the fatigue type of fracture—is allied architecturally to the lesion described below. A search of the literature being fruitless, it was thought worth while to record the following case both as a matter of interest and as a warning.

### Case Record

A shunter aged 43 was admitted to the orthopaedic department of Peterborough Memorial Hospital on July 24, 1943, an express train having run over his right foot, amputating it close to the ankle-joint. After resuscitation, as he was profoundly shocked, an amputation was performed 5½ in. from the inner side of his knee-joint. Three weeks later he was discharged from hospital, but attended for a considerable time for stump and hip exercises. In due course he was measured for his artificial limb by one of the best makers. On Dec. 8 this arrived, and on the following day he walked over to the hospital to show me his prowess. On Dec. 11, when some miles outside Peterborough, he felt something give in his hip-joint while stepping from a high pavement to the road. As he could not move he was brought to hospital again by ambulance. Radiographs showed a typical transcervical fracture and also the typical appearance of a disuse atrophy. A few days later a vitallium nail was driven across the fracture. After three months, as there was sound bony union, weight-bearing was started—this time very gradually. Now he is doing everything a modern artificial limb permits.

### Comment

This case, in my opinion, is a mixture between the fatigue type of fracture and that due to disuse atrophy, the precipitating factor no doubt being the latter, the hyperaemia caused by the unaccustomed activity helping to decalcify still further the weakened bony structure. This case serves as a warning—to me, at any rate—that weight-bearing should be given in graduated doses after an amputation, and no such warning or similar cases to this has been recorded.

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# Reviews

## SYPHILOLOGY

*Essentials of Syphilology.* By Rudolph H. Kampmeier, M.D. With chapters by Alvin E. Keller, M.D., and J. Cyril Peterson, M.D. (Pp. 518; illustrated. 25s.) Oxford: Blackwell Scientific Publications, Ltd.

Kampmeier's *Essentials of Syphilology* is exactly what it claims to be—a complete account of the commoner aspects of syphilis, leaving out or saying little about its rarer manifestations. As such we can say without hesitation that it is just the sort of book the average practitioner wants—and this is what gives it value, as apparently much more syphilis is treated by the general practitioner in the U.S.A. than in Great Britain. Readers will do well to study the preface, since there Dr. Kampmeier sets out his principal aims, which are to present a concept of syphilis as a systemic disease, to insist that every diagnosis of early syphilis must be verified by pathological examination, to raise the index of suspicion of syphilis, to improve methods of treatment, and to stress the need for regarding every case as part of a public health problem.

The book deals first with the biology of syphilis, examination of the patient, and therapy; then primary, secondary, latent, and late benign syphilis are followed by a consideration of the disease as it affects the various systems and organs of the body; finally, syphilis and pregnancy and congenital syphilis complete the clinical section. There follows a chapter on marriage and syphilis and a discussion of the various aspects of the disease as a public health problem, by Dr. Keller; this latter adds considerably to the value of the book, because if there is one disease more than another which should, theoretically, be capable of control by epidemiological methods it is syphilis. Only if those who see the disease in its early stages take a broad view and realize that at least two, and often many more, persons are involved in every case can the problem be tackled with any hope of success.

The subject-matter is clearly set out, there are numerous illustrations—most of which are quite first-class—and case summaries with comments which will prove helpful. Treatment of early syphilis is on the usual lines employed in the U.S.A. —i.e., alternating-continuous—but the necessity for employing adequate bismuth in the early stages is very wisely stressed: there can be no doubt that reliance on arsenic only at first has in the past been the cause of many relapses. Neoarsphenamine and mapharsen are named as arsenicals of choice without any particular preference being shown for either, and bismuth subsalicylate in oil is the routine heavy-metal preparation. Incidentally the individual doses of bismuth recommended seem to be on the small side.

If the literary standard is not as high as could be wished, and if a better knowledge of the classics would have precluded such expressions as "labium minor or majus," "condyloma accuminata (venereal warts)," "many *T. pallidum*," "vena cavae." These are venial errors, and are more than off-set by such gems, which appear here and there, as: "No method [of staining *T. pall.*] is of practical value in the accurate diagnosis of syphilis"; "The diagnosis of a syphilitic chancre on the basis of its clinical characteristics is inexcusable"; "No technician no matter how experienced is superhuman, and no laboratory no matter how good is infallible"; "Nor can it be estimated how many families have been broken up nor how many affianced couples have been estranged through lack of the proper interpretation of reports of a test. . . ."

## PSYCHOLOGY IN TERMS OF ANIMISM

*Food for Thought. A Treatise on Memory, Dreams and Hallucinations.* By Bernard J. Dufty, M.A. (Pp. 160. 10s. 6d.) London: Longmans Green and Co. 1944.

This is a plea for an animistic approach to psychology. The author is quite certain he is right and expects the reader to accept his convictions with the same ardent faith as he himself enjoys. He states: "The more honestly science is applied to psychology, the more unassailable becomes the animist position. Mechanistic theories are many, and their very variety is proof of their individual inadequacy. The materialist is constantly shifting his ground, but the animist stands fast to what introspection, science, and common sense tell him is the truth of the matter." Mr. Duffy begins by recording the unsatisfactory nature of existing theories of memory and the relationship of body and mind. With this most people agree. He then states that mind is an aura which can be seen and photographed. He quotes unconfirmed experiments in which the phantoms of grasshoppers were photographed at the moment of the insects' death. Also he is satisfied that a separate existence of mind is proved by the observations that a medium showed differences in haemoglobin and biochemical reactions when "herself" and when controlled by different "spirits," though, if the observations were confirmed, it is possible that emotional states may alter autonomic reactions. He goes further and states that the human body loses 2 to 2½ oz. at the moment of death, and that this is the weight of the soul.

Having established the independent existence of the soul, Mr. Duffy accepts much of the modern observations of electroencephalography and maintains that the human brain is used by the mind as a very delicate receiver and transmitter of high-frequency waves. He says, "My hypothesis is that every psychic activity, whether cognitive or conative, results in a discharge in the brain of electrical impulses, the frequency of which is constant for that particular activity; and that these impulses are the determining factors both in the integration of the motor nervous system and in the physiological processes of memory. This electrical receiver receives, records, and reproduces sensory impressions, and the mind can also initiate vibratory responses." Further than this the author accepts as scientifically proved the reality of telepathy, and explains its uncertainty by supposing that only a few people are capable of sufficiently sensitive and accurate tuning to receive thought transference. Memory is then a reproduction of these electrical recordings; dreams are similarly explained, but the reproduction is faulty and incoordinated and complicated by the reproduction of telepathic communications. Hallucinations are reproductions from a brain injured by physical and chemical (but apparently not emotional) agencies.

If the reader is convinced by the author's reasoning he will probably consider that he has presented a coherent argument explaining memory, but all will not be so convinced.

## PRACTICAL THERAPEUTICS

*Methods of Treatment,* with chapters on special subjects by various authors. By Logan Clendening, M.D., and Edward H. Hashinger, M.D. Eighth edition. (Pp. 1,033; illustrated. 50s.) London: Henry Kimpton.

This book, first published in 1924, has now reached its eighth edition. The authors are professors of medicine in the University of Kansas. The first part consists of chapters on drugs, anaesthetics, serums and vaccines, extracts of the ductless glands, dietetics, physical therapy, and radiotherapy. The second part deals with the treatment of special diseases. An impression is obtained in different parts of the book that there has been no complete revision since the original edition, in that in many places the book is out of date. In the chapter on extracts of the ductless glands there is no mention, for example, of stilboestrol or of methyl testosterone. A very incomplete account is given of desoxycorticosterone acetate. Thiouracil is not referred to. Myasthenia gravis is dismissed in eleven lines, and is explained as being a disease due to excessive action of choline esterase. Carbaminoylcholine is not mentioned. Thus the book has not a very modern point of view. Moreover, it exercises caution in criticism, when sometimes unhesitating condemnation seems required. Thus a regular American pick-me-up is bromo-seltzer, which contains acetanilide. The authors point out that long-continued use of coal tar products, especially this substance, leads to the formation of methaemoglobin and sulphhaemoglobin, but they say nothing of the danger of agranulocytosis, cases of which have now been described after the use not only of amidopyrine but also of phenacetin.

There is a useful chapter on physiotherapy, which though short gives details of the method of applying cold baths and wet packs. It is stated that the wet pack is a valuable remedy for insomnia among other conditions, and certainly it is probable that physical methods of treatment should be given wider trial in this common complaint, which is often so difficult to treat.

## MARRIAGE AND BIRTH CONTROL

*Modern Marriage and Birth Control.* By Edward F. Griffith, M.R.C.S., L.R.C.P. (Pp. 263; 7s. 6d.) London: Victor Gollancz. 1944.

Dr. Edward Griffith has made a name for himself as a teacher on the ideals of human marriage, preparation for it, and contraception in it. *Modern Marriage and Birth Control* was first published in 1935 and has been reprinted thirteen times since then. Now he has rewritten much of it, added a very useful chapter on the causes and possible treatment of sterility, and brought the section on contraceptives up to date in view of accumulated experience. References to other literature, both scientific and social, are given; there is an index, some plates, and a list of clinics where advice can be obtained. Much of the information would not be new to a doctor, but the manner of conveying it might prove very helpful. Clergymen, social workers, magistrates, school teachers, and others who need accurate information for themselves would find in this book all the facts they require.

The close connexion between man's spirit and the high creative possibilities of sex is constantly before the author's eyes. His style is simple, factual, and direct, intended for the general reader and intelligible to anyone serious enough to tackle so much material. The description of the initial approach to intercourse and the art of love making is well done. Dr. Griffith holds strongly that if study in this matter precedes practice much disappointment and even disaster would be avoided.

While no two writers would agree about every word or every emphasis in such a book, in which didactic statement is suitable, it can be said that there is moderation and accuracy throughout. If the format is not very attractive, owing to wartime restrictions, the size is comfortable and the price low. Dr. Griffith can be congratulated on his work.

## Notes on Books

*The Training of the Nursery Nurse*, an interim report of the National Council for Maternity and Child Welfare, is published by the National Society of Children's Nurseries, 117, Piccadilly, W.1. This pamphlet reports the findings of a committee. Recruitment, type of candidate, conditions of service, and particulars of training are duly considered. The final diploma gained by examination is intended to qualify the candidate for the post of staff nurse in a children's nursery or as a children's nurse in private households. The majority report of the committee recommends that the course, which is to train the girl in the care of healthy children from infancy up to school years, should be extended over two years. A minority report states that in a properly constituted nursery training college the course could be adequately covered in one year. Possibly this difference of opinion is more apparent than real, and if more specially qualified teaching staff were employed in the ordinary nurseries the proposed course might be shortened without detriment. This question of staff should receive consideration when wartime exigencies render it possible. These girls have the charge of children during the most important and formative years of life, and it is important to try to maintain in post-war years the general standard of personnel and training of the present nursery training colleges. The training of a nursery nurse which is here contemplated for girls from 16 to 18 years of age is a useful and pleasant occupation for any girl, besides being a valuable preliminary to a nursing career.

In the autumn of 1943 the British Medical Students' Association, whose office is at B.M.A. House, Tavistock Square, W.C.1, organized a series of lectures on war surgery. It has now been possible to publish these in pamphlet form. The lecturers were Sir James Walton (recent advances in the treatment of war wounds); Prof. J. Trueta (biological treatment of war wounds and fractures); Mr. A. Tudor Edwards (early treatment of wounds and injuries to the chest); Major-Gen. C. Max Page (surgery in the field); Mr. A. H. McIndoe (injuries of the face); Sir E. Rock Carling (burns); Surgeon Rear-Adml. G. Gordon-Taylor (surgery and Russia); and Col. Elliott C. Cutler (American views). This publication (price 2s. 6d.) may be had from the secretary of the B.M.S.A., or from Messrs. H. K. Lewis and Co., 136, Gower Street, W.C.1.

"Dr. JOHN DREW" is apparently a pseudonym for a medical man who is obviously familiar with his subject; he has written for the general public to give it information about human biology, sex, and venereal diseases, which are closely associated with sex (*Human Reproduction and Venereal Disease* (Faber and Faber; 3s. 6d.)). The average man or woman is extraordinarily ignorant about these matters; much of the V.D. now so prevalent is contracted through ignorance; instruction in sex matters and the dangers of V.D. is all too rarely given to children and young adults. This little book, therefore, should help to lift the veil, and it can be recommended to all laymen because education is the keystone of any antivenereal campaign.

## Preparations and Appliances

### SIMPLE DEVICE FOR CONTROL OF TENSION PNEUMOTHORAX

Major H. FULD, M.D., M.R.C.P., R.A.M.C., writes:

Tension pneumothorax (valvular) is rarely seen in civilian practice, but is a frequent complication among chest injuries in battle casualties. The customary method of dealing with this emergency is by needling, a long rubber tube being attached to the needle. The end of the tube is placed under water. This is somewhat complicated, requires frequent supervision, and is unsuitable for use in forward areas and during transport of the patient. To overcome these drawbacks the following device has been designed and has proved itself simple, efficient, and safe.

A transfusion needle from the Army set is passed through the centre of a rubber disk as supplied in the screw-cap of a glucose saline bottle. The needle is inserted into the second intercostal space. Local anaesthesia is unnecessary because the extreme distress and anxiety in patients suffering from tension pneumothorax make them oblivious to the slight discomfort caused by the insertion of the needle. The needle is firmly secured by strapping adhesive plaster across the disk. A rubber tube 8 in. long is attached to the needle by a metal connexion piece. A non-return valve (air-inlet valve) from the transfusion set is inverted and attached to the rubber tubing. This non-return valve allows air to be blown out of the pleural cavity, but none to be sucked in. The valve is stuck to the skin over the sternum. Eight inches of tubing allows the valve to lie flat. It is an advantage to leave half an inch of tubing on the distal side of the inverted valve as it permits attachment to the pump of Potain's aspirator if rapid removal of air is required. Penicillin can be injected into the pleural cavity after detaching the rubber tube with the metal connexion from the needle.

This device can be put in almost immediate use wherever there is an Army transfusion set. It is simple enough for use in the regimental aid-post, during transport of the patient in an ambulance, and for further treatment in C.C.Ss. and general hospitals.

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## INHERITANCE AND TUBERCULOSIS

Stocks[1] has recently remarked: "There is a modern tendency to ignore the existing statistical evidence about heredity, derived from the incidence of conjugal and familial tuberculosis, studies of twins, and laboratory work on animals. For this attitude there is no justification, but further statistical research is needed to elucidate the importance of inherent resistance in primary and secondary infection." It is, of course, true that deductions from human observations must be drawn with great care. Unless researches are particularly well designed, an element of doubt may reasonably remain as to whether the inter-family resemblances observed are to be ascribed to the inheritance of a similar genetic constitution or to such factors as the increased chances of infection among close relatives. There has appeared, very opportunely, a paper by Kallmann and Reisner[2] on a twin and family study of tuberculosis which can be described without hesitation as the most skilful and unequivocal piece of research yet undertaken on human twins. The care taken in the planning and execution of this study leaves nothing to be desired from the point of view of human genetics, of the medical aspects of tuberculosis, or of statistical treatment.

The first, and perhaps the most important, requirement is a good sample. This was secured through the co-operation of the tuberculosis hospitals and clinics of the State and City of New York, which notified over a period of nearly five years the cases of pulmonary tuberculosis coming under their care when the patient was one of a pair of twins. Investigation of the patients themselves—the index-cases—and of their relatives was detailed and thorough. (The individual who brings the family into the investigation is described as the "index-case.") The investigators finally had for analysis 308 twin pairs, including 334 index-cases (for some pairs were ascertained through both members), with manifest reinfection (adult) type pulmonary tuberculosis. In addition, there was investigated an unselected sample of relatives comprising 930 full brothers and sisters, 74 half-sibs, 688 parents, and 226 marriage partners. It is an indication of the efficiency of the sampling that the proportion of identical to fraternal pairs, 78 to 230, is almost exactly the same as the known proportion in the population generally. A satisfactory technique was used for adjusting for differences in age, sex, and colour, so that comparable proportions and rates were obtained for the various groups to be contrasted. The average age of the twin pairs at the time of investigation was 31 years, and where they were discordant—i.e., where the co-twin was free from pulmonary tuberculosis—they had been discordant for an average period of 6 years. The adjusted morbidity rates (essentially the chance of developing manifest pulmonary tuberculosis by the age of 29) are as follows: For the general population of the State and City of New York the rate is 1.4%; for the husbands and wives of the index-cases, 7.1; for their half-sibs, 11.9; for their parents, 16.9; for their full-sibs, 25.5; for their fraternal co-twins, 25.6; for their identical co-twins, no less than 87.3. The husband–wife figure is interesting and doubtless reflects a considerable incidence of direct infection. It is pointed out, however, that as Pope, Pearson, and Elderton[3] showed many years ago, there is a selective factor also. The tuberculous tend to marry each other, just as like attracts like in physical and mental things generally. In spite of the intimate contact of husband and wife, however, the rate even for half-sibs is much higher. Altogether, the progression of the figures is just what would be expected on genetic grounds.

Identical twins have an identical genetic constitution, for they were once a single individual; fraternal twins are no more alike genetically than brothers and sisters born at different times. It is true that identical twins tend to share a more similar environment than do fraternal (especially psychologically), but in the same way fraternal twins have a more similar environment than ordinary brothers and sisters. Yet in this collection fraternal co-twins are not affected more often than the other sibs of index-cases. This makes it very unlikely that the even more similar environment of identical twins could account for more than an insignificant part of the great difference in morbidity rates which is therefore to be ascribed to heredity. In any event, a difference so great that identical co-twins are three and a half times more likely to be affected than fraternal co-twins could not conceivably be explained in such a way. The general conclusion is reinforced by much else, including an analysis of the histories of exposure to infection, the evidence in regard to which is somewhat too intricate to be summarized here.

When index-cases and their co-twins were classified not merely according to whether they were affected or not but in addition according to differences in the extent and course of the disease, a far more striking contrast emerges. Instead of the identical co-twins being three and a half times more like their index-cases than are the fraternal co-twins, the concordance is now no less than sixteen times as great. Thus, while genetic influences are clearly potent in determining whether or not manifest tuberculosis is contracted, they are much more potent in determining the resistance of the individual to the established disease. It is a remarkable illustration of this finding that the chance of death from pulmonary tuberculosis of a person with the disease who has a healthy identical twin are practically nil. At this point the evidence is closely linked with that provided by the work of Lurie on rabbits.[4] In his experiments the infection rate was high (60 to 80%), and much the same in all strains. In resistance to the established disease, however, there were big inherited differences between resistant, intermediate, and susceptible strains. Lurie, who too

[1] *Practitioner*, 1944, **153**, 1.
[2] *Amer. Rev. Tuberc.*, 1943, **47**, 549.
[3] Drapers' Company Research Memoirs, No. III, London, 1908.
[4] Noticed in this *Journal*, 1943, **1**, 196.

part in the discussion following Kallmann and Reisner's paper, stated that in new experiments with greatly reduced intensity of exposure the results closely paralleled the human findings. Certain rabbits of high genetic resistance acquired an infection which healed completely, while others of low genetic resistance, similarly exposed to the same low intensity of contagion, developed fatal tuberculosis.

The discussion on Kallmann and Reisner's paper was opened by Barbara Burks, whose early death has unfortunately robbed human biology of one of its finest and most critical minds. Her opening words were: "This is a historic occasion." There could be no greater tribute; if the evidence satisfied her there will be few indeed who could detect a flaw in it. Previous work has been suggestive, and more than suggestive, but now no reasonable doubt can remain that human pulmonary tuberculosis is a disease influenced to a notable extent by inborn, inherited constitution—influenced, moreover, to a greater degree in regard to its behaviour when once contracted than in regard to whether it is contracted at all. But there is nothing in all this to discourage those who are combating it by devising improved preventive, diagnostic, and therapeutic measures. The exact reverse should be the case. To quote once again from Barbara Burks:

"This does not discount the environmental factors which an organization like this one [the American National Tuberculosis Association] emphasizes. It doesn't discount cod-liver oil or tomato juice, or fresh air, or any of the other environmental factors which have undoubtedly been greatly responsible for reducing the tuberculosis death rate. . . . It means, if it is not possible to segregate a tuberculosis case in a hospital or sanatorium, it is at least advisable not to have the *nearest* relatives of the patient take care of him. . . . It means that it is better to have a tuberculosis case taken care of by husband or wife than by parent, child, brother, or sister. . . . Prophylaxis should begin in regions where there is a history of heavy infection. . . . Nurses who undertake tuberculous nursing should be selected, if possible, as being free from tuberculosis histories in their families. . . . If . . . vitamins and other reinforcing elements of the diet . . . are limited . . . they should be routed first to the families who need them most."

A clear appreciation of the role of genetic constitution in pulmonary tuberculosis and all that this implies should fortify all the diverse lines of attack designed to control and prevent one of the most important of human diseases.

## NEW JOURNALS AND OLD

In spite of—or in some cases because of—the war, new medical journals come and old ones go, the first being a more difficult procedure than the second, if only because no new periodical may be launched without permission from the Government. Publishers of medical journals have had their fair share of difficulties, quite apart from the long-drawn-out rearguard action they have had to fight with the Paper Controller. The printing industry suffered severely at the hands of the enemy in the air raids of four years ago, and there has of course been a steady drafting of their skilled operatives into war work; and the flow of Government publications—many of them designed, so the cynic might suspect, to keep employed the numerous scribes housed in the Ministry of Information—has tended to crowd out less ephemeral work. So anyone starting a new periodical in wartime has to take his courage in both hands.

At the beginning of 1944 the first issue of the *British Journal of Industrial Medicine* was brought out by the B.M.A., and in the short space of less than a year it has, under the editorship of Dr. Donald Hunter, established a reputation for excellence and high scientific standing that may be the envy of older journals.

The beginning of the year, too, saw the appearance of the *Proceedings of the Nutrition Society*, under the general editorship of Dr. S. K. Kon. The Nutrition Society, founded during the war, has gone from strength to strength, and its successive meetings have attracted a growing number of those interested in this all-important subject. The Nutrition Society has an English group and a Scottish group, and so we find in the official organ of the Society a division of the proceedings into two parts, with separate editors for the English group and the Scottish group. The *Proceedings* is published "in order to record the papers and discussions of the scientific meetings of the Society . . . to place these before as large a public as present circumstances will permit." The first volume shows that the Editor has surmounted his many difficulties with skill. In a volume aiming at a wider public than members of the Society it cannot have been easy to know how much of a discussion should be included after the opening papers. The layout and choice of headings, too, becomes rather complicated in a volume of this sort, especially when there are two groups of the Society, necessitating such a heading as, "Fourth Scientific Meeting—Second Scottish Meeting." It might have been simpler to put as a footnote to the article the kind of meeting it was, whether English or Scottish, and details of the place and date of meeting. The typographical purist might object to mixing a sanserif with a serif type, but the former certainly brings out the names of the readers of papers and participants in discussion—this type being used nowhere else. The remarkable success of the Nutrition Society, and the interest displayed in the accounts of its work published in the medical and scientific press, suggest that something more ambitious than a *Proceedings* should be published, that, in fact, there is plenty of room for a *British Journal of Nutrition*—a journal that might well grow out of the *Proceedings* under the same distinguished auspices. The beginning of this year also saw the appearance of a new American journal—*Journal of Neurosurgery*—a witness to the growing activity of a highly specialized branch of surgery. On this side of the Atlantic the sign of the surgical times was shown in the changing of the title of the *Journal of Neurology and Psychiatry* to include in it the word *Neurosurgery*. We note with much sympathy and interest what will presumably be an ephemeral publication under the title of *Polish Science and Learning*, this being described as a series of booklets edited by the Association of Polish University Professors and Lecturers in Great Britain, under the honorary editorship of Prof. A. V. Hill, Sir W. D. Ross, and Sir E. J. Russell. No. 4, issued in March this year, was devoted to medicine, and opened with an account by Prof. A. Jurasz (Dean of the Polish Faculty of Medicine in Edinburgh) of the Polish Medical School and the Paderewski

Hospital in Edinburgh. Among the departures from the scene of medical journalism is the *British Journal of Children's Diseases*, which now ceases to be published separately and is to be incorporated in the *Archives of Disease in Childhood*.

This month for the first time the British Medical Association publishes the *Annals of the Rheumatic Diseases*, the lineal descendant of the Annual Report first published ten years ago by the British Committee on Chronic Rheumatic Disease appointed by the Royal College of Physicians and edited by Dr. C. W. Buckley. Four annual numbers of this report were issued, and in 1938 the work of the committee and the publication of its reports was transferred to the Scientific Advisory Committee of the Empire Rheumatism Council. For these past ten years Dr. Buckley has maintained the high editorial standard which has made the journal widely appreciated. He now leads the Editorial Committee jointly appointed by the B.M.A. and the Empire Rheumatism Council. As Lord Horder points out in a foreword to the current volume: "Rheumatism, because of its wide prevalence, and its resulting pain and disablement, is perhaps the most serious enemy of social well-being." He observes that the facilities for treating rheumatism have been grossly inadequate in the past, and are so indeed at the present, when "treatment appropriate to their needs is available to only about 10% of rheumatic sufferers." Lord Horder considers that if the Ministry of Health is to see that appropriate treatment is provided there will in the first place be "a great additional demand on the medical profession and its auxiliaries." When treatment is freely available on a nation-wide scale, facilities should also be provided for intensive clinical research, the recording of which in the *Annals of the Rheumatic Diseases* will, we may hope, bring essential knowledge before the medical public in this and other countries.

## "DISSIDENT DOCTORS"

"Silence is often the most effective answer to a vociferous and misguided minority," writes Gordon Malet in the *Spectator*. Gordon Malet's name does not appear in the *Medical Register*, but one presumes this is a pen-name for a medical man who has his own reasons for hiding his identity. The article from which the quotation comes is headed "Dissident Doctors," and is an effective attack on the Medical Policy Association. Previous articles by Gordon Malet in the same paper suggest that he, too, is among a group of "dissident doctors" and also belongs to a vociferous minority. He may belong to that small minority of doctors who find themselves within the fold of the Socialist Medical Association, who have become vociferous through undeniably skilful use of a propaganda machine driven by men no doubt ardent and sincere in the beliefs they hold. Equally sincere is the belief of a large number of doctors that the introduction of doctrinaire politics into medicine is doing untold harm to a profession which has never held it to be its duty to act as political proselytizers. One of the drivers of the S.M.A. machine seems to be Dr. Samuel Smith, who practises in the East End of London. A cyclostyled letter with his signature, and addressed to a doctor in another part of London, has come into our hands. Dr. Samuel Smith is apparently worried about correspondence on the White Paper in the medical and lay press—"and particularly in the *British Medical Journal*. Until recently," he goes on, "there has, however, been very little correspondence of a progressive nature to counterbalance the spate of vicious anti-White Paper statements." Dr. Smith evidently regards himself as being in the van of progress and in a position to offer guidance to colleagues who might like to join with him in becoming progressive. "It is in the hope," he continues modestly, "that you will agree to assist by sending a letter to the Press that I enclose a few notes on last week's report in the *B.M.J.*" (This refers to the *Journal* of Sept. 16.) It should be made quite clear at this point that Dr. Smith's cyclostyled guide to letter-writing was not addressed to the Editor of the *Journal*. The recipient was plainly one of that vociferous minority of doctors belonging to the Socialist Medical Association, and we assume that the other cyclostyled copies go to the rest of the small band of progressive companions. It is more than disquieting to notice that, at a time when the shortage of doctors is acute, a number of them are prepared to spend time, money, and paper in fomenting political activity and indeed in directing it. These medical men, while parading the fact that they are members of the B.M.A., are not content to work within it in a democratic way. In the *Supplement* to the *Journal* of Sept. 16 a letter signed by ten doctors appeared under the heading of "The White Paper and the Good Will of the Profession," and among the signatures is S. Smith. On looking once more at this, we find that the letter was printed and sent to us for publication by Dr. Smith from the same address as his guide to letter-writing.

"You will appreciate," Dr. Smith writes, "these notes can be used to develop arguments, *and a number of replies from different people along these lines would have an excellent effect*" (our italics)—the effect, no doubt, of making people as progressive as Dr. Smith is himself. The notes he supplies on the back of his cyclostyled document are assembled under the heading, "B.M.A. Council and the White Paper." "Council well advised to give up fighting against National Health Service and concentrate on securing good administrative machinery" is the call to action trumpeted by Dr. Smith in his most progressive mood. He ends his notes with confident assurance and an encouragement to the B.M.A. to be as progressive as himself. "Government intent on bringing in National Health Service, public wants it; full public and professional support for B.M.A. if more public-spirited approach shown." How reminiscent of Mr. Alfred Jingle at his best! Of course the B.M.A. Council is scolded when its views do not coincide with those of Dr. Samuel Smith, and he refers scornfully to "these Fabian tactics," and asserts in a challenging note: "Attitude and tactics of Council have also surely encouraged such people as M.P.A., whose disgustingly unscrupulous methods Council correctly opposed. Progressive people will support Council against attacks of M.P.A., but would do so more readily if Council did not make it so easy for M.P.A." It appears that the B.M.A. Council is remarkably impartial, at least according to the interpretation of Dr. Smith, because it makes it easy for the M.P.A. and at the same time correctly opposes it.

Has it occurred to Dr. Smith and his fellow-propagandists that the formation of such bodies as the M.P.A. may be the inevitable reaction to the existence and activities of the Socialist Medical Association? If one small politically minded group in the medical profession begins to use professional status as an opportunity for spreading political doctrines, then other dissident groups will assuredly spring up and do likewise, to the infinite harm of the

profession whose interests they claim to have at heart. As Gordon Malet says, when a "minority is succeeding in persuading a substantial number of worthy people that there is something in what it says, the time for silence has passed."

## PNEUMONIA: A STATISTICAL APPROACH

Pneumonia is a disease of variable incidence. Twin studies[1] indicate that inherited differences in susceptibility are at best of small account. Hence a favourable opportunity is provided for analysing the part played by occupational differences and other environmental factors in determining the occurrence of an important disease. In an interesting paper W. J. Martin[2] presents a statistical analysis of one of the most remarkable features of the disease—its much higher incidence among males: he shows that this is a fruitful line of approach which leads to important conclusions. The sex ratio of deaths from pneumonia is very different at different ages. Taking female deaths as 100 in each instance, the corresponding male death rates in England and Wales during 1924–38 were as follows: under 1 year, 133; from 1 to 15 years, 114; from 15 to 65 years, 208; over 65 years, 123. It is shown that variations in the sex ratio of deaths during infancy are related to the total incidence of deaths from the disease; when pneumonia is prevalent the excess of boys affected rises. Variations in social conditions and degree of urbanization have little effect on the sex ratio. The discrepancy between the sexes is least in childhood. Such variation as there is is not affected by degree of urbanization. Moreover, the factors making for male excess in infancy and childhood respectively are not the same, for they vary independently. In old age the discrepancy between the sexes has fallen once again, and a study of its variations yields no clear indication of any important association.

The chief interest of this study lies in the period of working life, 15–65 years. In sharp contrast to the periods of life which precede and follow it, more than twice as many men die of pneumonia as do women. The first point examined is the possible influence of social class. Although the total incidence of deaths from pneumonia rises steadily as social class falls, being nearly twice as great in the lowest as compared with the highest, there is little, if any, corresponding effect upon the sex ratio of deaths. The male excess is much the same in all. A likely guess—that variations in the male excess are occupational—is examined by comparing the rates among men in different occupational groups with those among their wives. It is found that in general wives tend to share the high or low rate of their husbands' group. There is, however, an indication of two significant exceptions—in hotel-keepers and furnacemen—where the male rate was high, the rate for the wives not differing from the rate for wives generally. Thus, apart from the indication of special risks associated respectively with high consumption of alcohol and big changes of temperature, it would appear that variations in the male excess are not directly occupational. Causes are to be sought, rather, among the indirect risks associated with the general conditions of life usually characteristic of particular occupations. One factor of evident importance is the degree of urbanization. In rural districts the discrepancy is much less. During 1924–38, in England and Wales, the number of male deaths from pneumonia per 100 female deaths was only 174, compared with 208 for the two countries as a whole.

Like so many fruitful statistical studies, this example points to the beginning and not the end of research. The question why there should be a great excess of male deaths from pneumonia, this being largely confined to the working years, is tentatively answered by the hypothesis of an indirect occupational risk, coupled with the greater prevalence of alcoholism among men (for a small proportion of men carrying a specially heavy risk would influence the sex ratio of deaths considerably). But the most important result of this paper should be the stimulation of further research into the factors which underlie susceptibility and resistance to pneumonia.

## MIDWIVES IN WARTIME

The report on the work of the Central Midwives Board for England and Wales during the year ended March 31, 1944, is a stencilled document mentioning briefly some matters of interest and importance. The Board pays tribute to the magnificent service rendered by midwives to the community. The increasing birth rate and the shortage of staff, both medical and nursing, have pressed heavily upon the maternity service of the country. The shortage of practising midwives, which has caused anxiety for some time, was dealt with as a matter of high priority by the National Advisory Council of the Ministry of Labour and National Service, and the measures taken have led to a slight improvement in the position for the moment. A certain number of midwives not in active employment were encouraged to return to the work, and the Board has co-operated in securing vacancies for refresher courses when required. In Sept., 1943, the Control of Engagement Order was extended to midwives. All newly qualified midwives were required to do a year's midwifery practice after enrolment, and practising midwives had to continue with midwifery work until May 31, 1944. On that day the Roll of Midwives contained the names of 68,859 women, being 1,747 more than at the end of March, 1943; but the total number listed as practising was only 16,071. The examination arrangements again proceeded without interruption, the wartime expedient of holding written tests at the hospitals and oral tests at a large number of centres being adhered to. On March 31, 1944, the number of institutions approved for instructing midwives in the use of recognized apparatus for nitrous oxide-and-air analgesia was 91. Compilation of a register of midwives qualified to give gas-and-air analgesia continues, and so far some 2,400 midwives are known to hold the qualification. In consequence of a letter from the Medical Officer of Health of the L.C.C. drawing attention to the existence of a widespread custom among midwives of making arbitrary deductions from the birth weight of infants, and of comments from the secretary of the College of Midwives on this matter, the Board issued a statement to all approved training schools for pupil-midwives stressing the importance of strict accuracy in the keeping of records, and drawing particular attention to the need for accuracy in weighing infants. This matter was raised in the correspondence columns of the *British Medical Journal* of June 5, 1943 (p. 706), by Dr. Letitia Fairfield.

Prof. Charles Bruce Perry will deliver the Bradshaw Lecture before the Royal College of Physicians of London on Thursday, Nov. 9, at 2.30 p.m., at the College, Pall Mall East. Subject: "The Aetiology of Erythema Nodosum."

[1] O. von Verschuer, *Erbpathologie*, Dresden, 1934.

[2] *J. Hyg.*, Camb., 1944, **43**, 315.

# THE UNDERGRADUATE PERIOD

## ADDRESS BY SIR JOHN FRASER

The address inaugurating the new session at Westminster Hospital Medical School was delivered by Sir John Fraser, Principal and Regius Professor of Edinburgh University. Speaking first of the influence of undergraduate training on personality, he said that in the discussions on the medical curriculum he had noticed very little comment upon the psychological influences of the university upon the undergraduate mind. The practice of medicine was something more than the treatment of disease: it was a great moral enterprise; and called for more than the application of scientific knowledge and technical procedures: it demanded the exercise of that subtle factor, personality.

Personality sprang from two roots—intelligence and the influence of environment. He assumed that all his listeners possessed the first; but there was something more, and unless it was acquired and developed the full measure of future success might be withheld. What was this mysterious ego which one either gained or missed during the years of professional training? It was the moulding and development of personality by the influence of the environment in which the student lived and worked. All medical schools possessed their distinctive environment: the tradition of the hospital and school, the influence and example of teachers, and contact with fellow students. The Westminster traditions were many and colourful; its teachers, past and present, had a high place in the annals of the profession; and the opportunities for student contacts and discussions which sharpened the wit and stimulated the ambition were abundant.

### A Need to Redress the Balance

Sir John Fraser went on to suggest that there was some need for a readjustment of the balance of undergraduate teaching:

"The experience gained in thirty years of teaching has left me with the impression that we are apt to pay undue and growing attention to the presentation of detail and minutiae at the sacrifice of fundamental and general conceptions. . . . . Forty-two years ago I began the study of medicine; from that date until now the length of the curriculum has remained unchanged, but when I review the demands which are made upon the undergraduate body and contrast them with those which I encountered, I realize that there is one outstanding dissimilarity between the periods—it is the degree to which detail, often meticulous in amount, is given an increasingly prominent place in the teaching programme."

He suggested that the presentation of the physical and biological sciences—the introduction to medicine—should be concerned with those principles which had a bearing upon the problem of health and disease rather than with detail which had no direct association with medicine, and in the preclinical subjects the detail should be restricted to facts that were related to clinical considerations.

Insistence upon minutiae not only impaired the primary object of undergraduate training, which was to provide the student with a comprehensive and well-balanced knowledge of the problems that were likely to confront him in average general practice, but it also, if pursued to an undue extent, diminished the powers of logical thinking and deductive reasoning, and offered little or no encouragement to the development of imagination. Imagination was the heritage of youth. In childhood it was pleasurably creative; in school days it underwent a temporary eclipse, because it did not flourish in an atmosphere of regimentation and routine; but it should find its "second wind" in the spacious fields of undergraduate occasions, and if at that time its development was smothered it was unlikely to reassert itself in later years.

### Practitioners of To-morrow

In a short while those to whom he spoke would possess the qualifications which permitted them to practise the profession they had elected to follow. From whatever aspect they viewed it, they would find that the practice of medicine would yield them satisfaction.

"To you will be granted the privilege of practising a profession which is scientific in its basis and logical in its applications, which is creative and constructive in its aims, and which has as its ultimate object the provision of that which is surely the most precious of all possessions, mental and physical health."

Finally, Sir John Fraser spoke of the future. When the Government scheme for a National Health Service came into operation, he said, it was certain to offer a considerable enlargement of the field of medical opportunity. A service universal in range and complete in provision would demand a big increase in the present number of doctors. The increase would apply to every section and department of medical activity, though no doubt the expansion would be greater in some branches than in others. But there had never been an unemployment problem in medicine; taken all over, the demand had exceeded the supply, and, if he read the omens aright, future demands would be so many and so heavy that for a time at least they would tax the available resources to the utmost.

It was probable that there would be a sharper distinction between different types of professional work than at present. The specialist category would be more clearly defined, and inclusion in that group would demand the fulfilment of obligations which had not existed hitherto. While experience had shown that the combination of a certain amount of specialism with general practice might be successful and useful to the community, he believed that the ambit of specialism would be so clear-cut and defined that it would be difficult to pursue the "combination" system.

Work under the new scheme was likely to proceed under more favourable conditions than to-day. It would be so arranged and integrated as to ensure to the medical man the gift of leisure. He knew that there was another side of the picture, and that apprehensions had been expressed that there might be some interference with liberty of action, that the sense of security might lessen initiative, and that the exercise of the art of medicine might become increasingly impersonal.

"There may be some justification for these fears; but, after all, they may prove to be unfounded, and if experience shows them to be real and prejudicial it will be the business of the individuals affected to do what they can to remove them. And I would remind you that developments which postulate advantages to the many are likely to imply some degree of sacrifice by the few."

# MEDICAL DEFENCE UNION

The annual general meeting of the Medical Defence Union was held on September 19 under the presidency of Dr. James Fenton.

In his address from the chair Dr. Fenton announced that 1,861 members had been elected during the year—the highest figure recorded in the history of the Union—and the total membership was now 27,439. He alluded to the termination of the Spackman case, which had been reheard by the General Medical Council in the way in which the legal advisers of the Union had always claimed that it should have been heard—namely, that evidence should be allowed which was not tendered at the Divorce Court. It was satisfactory that in similar cases the Council would have to follow the lines laid down by the House of Lords, necessitating sometimes a more complete hearing before the verdict was given. He went on to state that a certain number of deaths under anaesthesia had given rise to disquiet. The Union had looked into the matter and was satisfied that manufacturing difficulties arising from wartime problems were contributory to mistakes in the identification of gas cylinders. A subcommittee had been appointed to confer with the Society of Anaesthetists, and this joint body had consulted the manufacturers of anaesthetic gases and also the British Standards Institution. A short-term policy to meet the immediate wartime difficulties and a long-term policy to remove all uncertainties and ambiguities in regard to the marking of cylinders had been elaborated, and it was hoped that the result would be to prevent the occurrence of such accidents.

The President mentioned that an authoritative document had been prepared and was available for any practitioner who wanted advice on being approached by a patient on the subject of artificial insemination. Counsel's opinion had also been elicited on the question of the reporting by practitioners of deaths to coroners. He went on to refer to the grave concern felt in certain quarters concerning the quality and standard of the medical certificates issued by some practitioners, and urged members to exercise scrupulous care in this matter; especially should they refuse to be importuned by their patients to issue a certificate when there were no adequate medical grounds for doing so. The Union could not hope, he said, to achieve any success in the defence of a member who had disregarded these basic principles. Finally, he reminded all concerned that even if as a result of legislation a complete or partial State Medical Service came into operation membership of the Union

would be none the less essential to ensure the necessary legal and financial aid which a practitioner sooner or later might require. The State or the local authority did not accept responsibility for the professional mistakes of its medical staff.

The annual report and statement of accounts were adopted. The accounts showed a credit balance of £7,779 on the year. Dr. Fenton was re-elected president, Mr. E. D. D. Davis treasurer, and Prof. Gilbert Strachan was added to the vice-presidents. The retiring members of Council, Dr. Elizabeth Bolton, Dr. E. Lewis Lilley, and Dr. Henry Robinson, were re-elected.

## THE TUBERCULOSIS SERVICE

The Joint Tuberculosis Council at its meeting in Birmingham on Sept. 16 decided to publish reports on two important subjects.

### Report on Reorganization

The report of the Council's Committee on the Reorganization of the Tuberculosis Service proceeds, from a survey of the progress made in the 32 years which have elapsed since the publication of the Astor report, to a definition of principles for the continued development of the fight against the disease. The experimental stage, says the report, is past. The principles of 1912 are still of basic importance, but extension of them is needed in several directions.

The individual patient must not be considered as separate from his family when the question of treatment arises; the family is the unit for treatment, whatever the manifestation of the disease, whatever the prognosis, whatever the probable future working capacity of the patient. Small authorities, the report states, should combine to form joint tuberculosis boards, and the smallest authority should not deal with a population aggregating less than 250,000. Some arrangements should be made to remove the need for interpreting fresh advances in medicine to 188 separate lay authorities before improvements in the service can be brought into general effect. Better central supervision of local tuberculosis services and national minimum standards are needed. Housing authorities should be obliged to provide suitable living accommodation for families which include tuberculous persons. The necessity for full co-ordination of tuberculosis services with other public health units and the unwisdom of allowing tuberculosis clinicians to work in "isolation" are stressed.

Other sections of the report deal with the equipment of dispensaries and the importance of associating these with hospital out-patient departments. It is suggested that "boundary barriers" should not be allowed to obstruct the use of dispensaries by patients living near them. Special sessions for children are advocated. The tuberculosis officer should be provided with hospital beds for the observation of cases, and these beds should be under his own care. Waiting lists must be abolished, not merely for the cases of pulmonary tuberculosis but for all varieties of the disease.

Medical education in tuberculosis (undergraduate and post-graduate) is discussed, and the lack of official encouragement for research and statistical study criticized. It is pointed out that tuberculosis nursing is still not recognized as a specialized branch of the nursing profession. Revised qualifications for tuberculosis officers are proposed, and these include, for the junior entrant, certificates of having held residential posts in general hospitals (with, if possible, experience in children's wards) and a certificate of training in social medicine as part of a reformed D.P.H. The tuberculosis officer must stand in professional relationship to the general practitioner as an expert and specialist in chest diseases of all kinds, must devote the whole of his time to tuberculosis and other lung diseases, and must not be asked to combine other public health appointments with his tuberculosis work. Salaries must be such as to attract highly qualified men and to compare favourably with the salaries of administrative medical officers. The tuberculosis service must be brought more into the current of general medicine than hitherto.

The report suggests that two forms of notification be employed instead of the present single form. "Notification" would be reserved for infectious or progressive types of tuberculosis, and a new procedure of "intimation," or provisional notification, would be introduced for cases of infection in which the activity of the lesion was in doubt. Transfer from the "intimation" category to the "notification" category would be at the discretion of the tuberculosis officer. "Intimation" should also apply in cases of phlyctenular conjunctivitis and erythema nodosum.

It is strongly emphasized that no tuberculosis scheme is complete without a comprehensive scheme of after-care, rehabilitation, and resettlement.

### Wartime Diet for the Tuberculous

The report of the Council's Committee on Nutrition deals with the subject of wartime diet. It sets out to assess whether the diet available to tuberculous persons during the present war is sufficient (*a*) to help the infected person to avoid developing active disease, (*b*) to treat the active case during stay in an institution, and (*c*) to aid the discharged patient to avoid relapse after leaving the institution.

In investigations such as these, questions of calories and vitamins obviously exist side by side with questions of finance. It is calculated that from rationed and "points" foods about 1,000 calories a day can be obtained, and that the additional 1,600 calories necessary to keep above the "danger line" can be obtained from unrationed foods such as offal, fish, sausages, potatoes, bread, flour, fruit, and vegetables. The wartime diet of rationed foods supplemented by unrationed foods provides, according to the report, the requisite vitamin intake. But 8s. 6d. or 9s. a week must be spent to provide these calories and vitamins, whereas the maintenance allowances for the dependent children of a tuberculous person, permitted by Ministry of Health Memorandum 266/T, range from 5s. to 8s. a week, according to age. Moreover, although the J.T.C. considers 8s. 6d. a week per person the minimum sum to be spent on food alone to help infected persons to escape active disease, it observes that this does not necessarily mean that the patient is receiving food in satisfactory quantity.

With regard to institution diets in wartime, the J.T.C. quotes approvingly from the recent report of the King Edward's Hospital Fund on hospital diets, and adds some riders about "priority" milk, the addition of vitamin C to tuberculosis diets, and the preparation and presentation of institution meals. On the question of diet for the discharged patient, it points out that, with the "priority" allowance of 2 pints of milk a day, the patient has exactly the same amount of food available to him as he had in the sanatorium, and, in addition, he can obtain meals in canteens and restaurants. As he will often be doing more work "outside" than he did in the sanatorium, he probably needs these extra meals to combat any tendency to relapse. With regard to children, the report says that for those under 5 years old the optimum daily quantity of milk is 1 pint, and for those between 5 and 12 years the optimum daily quantity is 1¾ to 1¾ pints; therefore, instead of 2 pints daily, tuberculous children should be allowed 1 pint and extra butter, cheese, or eggs.

The report on wartime diet concludes with a strong plea for more general and more efficient pasteurization of milk, and urges the Government to facilitate the manufacture of pasteurizing plant, to pool pasteurization facilities in areas where this is practicable and desirable, and to inform the public officially that when pasteurized milk is not available boiling is the only satisfactory alternative.

Copies of both reports may be obtained on application to Dr. Norman England, Hon. Secretary, Joint Tuberculosis Council, 1, Becket Street, Oxford.

# Nova et Vetera

## BOLOGNA AND THE BEGINNINGS OF ANATOMY

Of the ancient Italian medical schools the most interesting are those at Salerno, at Bologna, and at Padua. After the landing at Salerno we published some notes on the history of its school (*Journal*, Sept. 25, 1943, p. 402). Now that our armies are closing in on Bologna, we direct attention to certain important incidents in the history of its venerable university. We hope that circumstances will soon call for a similar note on Padua.

Bologna is an important railway junction and manufacturing centre, with a peacetime population of about 200,000. It also contains many highly interesting antiquities, notably its famous towers and its unique collection of Etruscan remains. In ancient times it was an Etruscan stronghold and sided with Hannibal in the Punic War. In 189 B.C. it became a Roman colony. Legend tells that the university was established by Theodosius the Great in A.D. 425, and certainly it was a renowned law school very early in the Middle Ages. Other departments accumulated around that of law, and it thus became the first institution in Europe to which the term "university" can rightly be applied. An organized medical school can be traced back as far as 1156.

At first the teaching of medicine at Bologna, as elsewhere, consisted entirely in readings and commentaries of Latin translations of Arabic, Greek, and Hebrew works. The Medical Faculty was so dependent on the jurists that until 1306 it was not permitted to elect its own head. This is of importance in view of the manner in which dissection of the human body began at Bologna.

### An Early Post-mortem Report

Post-mortem examination is heard of earlier than dissection. It is quite natural that we should have early news of this process at the greatest of law schools, but the very first frank

account of a necropsy comes to us from Cremona, some 150 miles to the west. The Franciscan Salimbene of Parma, in his chronicle of 1288, tells that, during a pestilence two years before, a physician of Cremona opened a corpse to see if he could find the cause of death. The first formal account of post-mortem examination does, however, come from Bologna. In February, 1302, a certain Azzolino died there under suspicious circumstances. Poison was suspected; a judicial inquiry was held, and a post-mortem actually ordered by the court. It was conducted by two physicians and three surgeons, with Bartolomeo da Varignana at their head. Their report exists, and terminates with the formal statement, "We have assured ourselves of the condition by the evidence of our senses and by the anatomization of the parts." There is no remark that the proceeding was unusual. Bartolomeo was professor of medicine at Bologna, an office in which he was succeeded by his son and two of his grandsons.

A fellow student of Bartolomeo at Bologna was the Norman, Henri de Mondeville. About 1300 he settled at the famous and ancient medical school of Montpellier. There, some years later, he wrote a book on surgery, which was decorated with figures displaying dissections. These, unfortunately, have disappeared, but some small and inferior copies of them have survived, so that we know their general character.

### Taddeo and his School

Now, towards the end of the fourteenth century the medical faculty at Bologna included among its members a most remarkable man, Taddeo Alderotti (1223–1303). Under the cloak of extreme scholastic conservatism he succeeded in introducing many changes in the intellectual climate of the University. He understood well the importance of access to Greek sources, and encouraged the preparation of good Latin versions. He himself translated an Aristotelian treatise into Italian and impressed Dante with his powers and knowledge. He stamped his personality on the whole development of medicine at his university. He is bound up with the beginning of dissection in a peculiar way. Not only are many hints of post-mortem examinations scattered through his *Consilia* but all the first generation of writers who discuss dissection—Bartolomeo da Varignana (died 1318), Henri de Mondeville (died 1320), and Mondino de Luzzi (died 1326)—were his pupils. The evidence is that the process was initiated by Taddeo himself. As the revival of medicine in North Italy is investigated the lines seem always to converge on him.

The most famous of the pupils of Taddeo is Mondino. He was born near Bologna, graduated in medicine there, and joined the teaching staff soon after Taddeo's death. He is the first known to have dissected the human body systematically in public, and his book on anatomy is the first based on direct knowledge of human dissection. He thus introduced practical anatomy as an academic subject. His *Anothomia*, written in 1316, rapidly became a standard work. It retained its position for nearly three centuries. It was the most widely read text when Vesalius began to teach at Padua towards the middle of the sixteenth century, and was still studied when Harvey was a student there at the end of that century. Anatomy had by then passed from Bologna to Padua, but Bologna was its cradle and Taddeo and Mondino were its two godparents.

## BEQUEST TO AN APOTHECARY'S WIDOW IN THE FOURTEENTH CENTURY

The will of John Foot (alias Maryns), apothecary, was proved in the Hustings' Court, London, in 1384–5. It had been signed in 1381. At such an early date it is unusual to find so long a period of time as three years intervening between the signing and probation of a will. He willed his body to be buried in the "Pardounchirchawe," and among other bequests left to Cristine atte Bowe, widow of Thomas atte Bowe, citizen and apothecary of London, a "calyxcoppe" standing upon lions silver-gilt with silver covercle and 100 shillings. When the widow died at the end of March, 1403, her will was proved both in the Hustings' Court and in the Commissary Court of London. Her son, John, inherited "my silver cup standing upon lions gilt, with cover." This lady also desired to be buried in the Pardonchirchawe, which was situated on the north side of the cathedral. It is not often that one can trace a piece of plate through two wills at so early a date as this.

# Correspondence

### Rate of Artificial Respiration

Sir,—The article by Dr. P. R. Tingley (*Journal*, Sept. 16, p. 366) calls for prompt criticism.

Quite logically he recommends (from his breath-holding experiments) that the rate of artificial respiration should be as fast as possible consistent with efficiency—i.e., Schäfer's method 30 to 60 times a minute, Silvester's up to 45, and my rocking method at double the usual rate or faster. He also "states confidently that an increased rate can do no harm in any case, and must in many cases do much good." This sentence alone shows that he is unaware of the dangers of acapnia, and is therefore hardly qualified to revolutionize resuscitation.

His arguments are the more dangerous because they are so plausible (especially when cyanosis is present). Indeed, they are unanswerable if one falls into the old error of assuming that the state of a drowned person and his needs are similar to those of a conscious subject. They are quite different. Thus, in the normal subjects of Dr. Tingley's breath-holding experiments combustion (turning $O_2$ into $CO_2$) is active—especially in the muscles resisting respiration—and $CO_2$ is accumulating in the blood until it stimulates the respiratory centre beyond resistance by the will. Respiration has then to be violent to make up for arrears. But in the cold and toneless drownee combustion is in abeyance, the consumption of $O_2$ is minimal, and very little $CO_2$ is being formed. Hence, when cyanosis and errors of $CO_2$ and $O_2$ have been adjusted by the first few minutes of artificial respiration, overventilation may then easily wash out too much $CO_2$ and produce a deficiency of it in the blood (acapnia).

Very briefly, the dangers of acapnia are: (1) The respiratory centre is deprived of its normal stimulus ($CO_2$); this causes apnoea, which may be fatal to the centre if prolonged. (2) Lack of $CO_2$ makes oxyhaemoglobin reluctant to part with its oxygen to the tissues. (3) The capillaries of the brain (and intestine) have been shown to constrict. (4) Acapnia causes atonia in the muscles, so that the unsupported veins dilate and the left heart is unfilled. Atonia of the diaphragm allows the lungs to collapse.

So acapnia has very ugly possibilities, though perhaps we are apt to magnify them. In fact, Prof. R. R. Macintosh of Oxford kindly wrote me (Dec., 1943) that in some operations apnoea is maintained by hyperpnoea for 20 or 30 minutes without apparent injury from acapnia. Recovery occurs without using $CO_2$ (avoided as being toxic to nerve cells *in extremis*).

Different rates of artificial respiration by rocking have already been investigated by Eve and Killick (*Lancet*, Sept. 30, 1933), who found that the adequate ventilation of 6 litres was produced in a minute by 10 double rocks through a total angle of 100 degrees without reducing the $CO_2$ in the expired air below normal. Increasing the rate up to 20–22 per minute increased the ventilation but reduced the $CO_2$ too much. As to the important aid given to the circulation by the rocking method (presumably by the weight of long columns of blood acting alternately in arteries and veins, reflux being prevented by valves), it is evident that in rapid rocking this hydrostatic effect would not have time to act. Prof. Hemingway advises 4 seconds head-down and 3 seconds feet-down for the circulation.

A year ago the Home Security Department of the Australian Government cabled me that their medical advisers considered 12 rocks a minute excessive and likely to cause hyperventilation: they suggested half this rate, or 12 rocks dropping to 6 after the first 5 minutes. I replied with the above evidence, but obviously these experts feared acapnia. For all these reasons I trust that the present recommended rate of 9 double rocks per minute through 90 degrees will not be exceeded. It would be a serious step to increase the standard rate (12 per minute) of Schäfer's and Silvester's methods. Possibly an expert in acapnia might like to do so in the early stage of cyanosis, but the first-aider must be given a definite rule.—I am, etc.,

Hull. Frank C. Eve.

## Intravenous Anaesthesia

SIR,—In recent years several devices for the administration of continuous or intermittent pentothal have been produced. The latest are those described by Major W. W. Maidlow (Sept. 30, p. 432) and Major Wallace M. Dennison (Sept. 30, p. 437). All such devices suffer from the disadvantage that they require cumbersome apparatus. The following method, for which no originality is claimed, is just as effective, more controllable, and involves a minimum of equipment—a 20-c.cm. eccentric nozzle syringe, needle, sand-bag, tourniquet, Spencer-Wells forceps, and arm-board or anaesthetic trolley. Pentothal in 5% solution is used throughout. The average patient is induced with 0.5 g., transferred to the operating table, and put on nitrous-oxide–oxygen. An arm-board is placed in position, or the arm stretched out over a trolley, a small sand-bag being used as support. A tourniquet is applied, and a needle, with the 20-c.cm. syringe attached, is inserted into the vein. The tourniquet is loosened and is used, secured by Spencer-Wells forceps, for keeping the syringe in position on the arm. Injection is made as required. Clotting will not occur if a sufficiently coarse needle (size 12 or larger) is used, and if minimal amounts of solution are injected every few minutes.

All operations for which pentothal is a suitable anaesthetic agent can be performed with this technique. An arm-board is preferable to the trolley for supporting the arm, as then the table can be moved either bodily or into a Trendelenburg tilt with no risk of displacing the syringe. In those cases in which the patient is already on a saline drip the pentothal may be introduced directly through the rubber tubing after this has been pinched up distal to the needle puncture. I have found this method simple and satisfactory.—I am, etc.,

London, N.W.3. HELEN BOWER ALCOCK.

## Apparatus for Fractured Femur

SIR,—In the third edition of his *Fractures and Joint Injuries*[1] Mr. Watson-Jones goes to some pains to discuss and to condemn the method of treating fractures of the shaft of the femur by the Hamilton Russell traction apparatus. As the great weight of Mr. Watson-Jones's authority may lead to the disuse of this excellent apparatus I would like to say something in its defence. In the first place, this apparatus is easily the most comfortable of all that can be used for fractures of the femur. In the second, it is very easy to put on and requires no special piece of apparatus that cannot quickly be obtained. The Thomas-splint method, by way of contrast, requires a Thomas splint that fits the patient well. This is a matter of small moment in a big city hospital, but it is of some importance to a practitioner in a remote area who is unlikely to have more than one Thomas splint in stock. In the third place, if the surgeon uses the apparatus correctly he can expect to get a result either where there is no shortening at all or where there is not more than half an inch of shortening. This apparatus has been in routine use in this hospital since 1926. There are a number of patients in the neighbourhood who have one femur half an inch shorter than the other. If they have any disability they certainly don't complain of it.

If the method is to be used properly, however, there are certain points that should be noted. It is impossible to put the splint up properly without first studying thoroughly Hamilton Russell's own description.[2] If this is not done it is almost certain that the apparatus will be so put up that the necessary forces are pulling in wrong directions. The diagram shown by Mr. Watson-Jones is correct. In putting up the apparatus there is one very important point—and that is that extension should be applied to both legs. This was first done, so far as is known, in this hospital in 1926. When Mr. Hamilton Russell saw this method in action during a postgraduate tour late in 1926 he expressed his strong approval of it, and until his death both used and advocated the two-leg method. The advantage thus gained is that it obviates trouble arising from the pulling down of the pelvis on one side. Although easily put up, the apparatus is certainly not self-regulating, and requires constant attention. This is to be regarded as a virtue and not a fault. The three main difficulties are: (1) a tendency to eversion—this can be overcome by making the sling under the knee pull from the outer side; (2) the tendency of the patient to slip down in the bed and thus to alter the parallelogram of forces—this is helped by taking away the patient's pillow or by gaining his co-operation; (3) the tendency of the fragments to sag backwards at the site of fracture. Mr. Russell used to place under the site of fracture a small pillow, which had to be constantly adjusted. Possibly a better method is to make a plaster gutter for the back of the thigh and to put the pillow under this. If the surgeon is prepared to give the attention that is required he can be quite certain of getting a good result.

A description of its practical application should not conclude a discussion on the Hamilton Russell extension apparatus. It is usually forgotten that the apparatus represents the practical application of a great principle. This principle has to do with the action of muscles on bone fragments. For generations it has been taught that, if a fracture separates one muscle group from another, the whole limb must be postured so that the distal fragment corresponds to the position into which the proximal fragment has been drawn by unbalanced muscle action. Hamilton Russell taught the exact opposite. He taught that if the fractured limb were placed in a position of physiological rest the unbalanced muscle action would soon cease to have effect, and that all muscles would do their best to return to their ordinary position. In two articles[3,4] I critically examined his contention in the light of acknowledged physiological research. On re-reading these articles I see that I have since learned a good deal about fractures, particularly in regard to the time necessary for union. With regard to the action of muscles on fragments, however, every year of experience confirms me in the belief that Mr. Hamilton Russell enunciated a master principle when he wrote the following words: "Muscles are the creatures of habit and the slaves of custom. In a broken limb every muscle and muscle fibre will co-operate in the endeavour to preserve the position to which it has been habituated, and the last thing a muscle will do will be to abuse its liberty by displacing a fragment into an unnatural and unaccustomed position."[5]

There is one thing more that can be said about Hamilton Russell's contribution to the study of fractures, and that is that he was one of the first to insist on active as opposed to passive movement.

May I, in conclusion, pay a tribute to Mr. Watson-Jones's great work on fractures, which in this, as in many other hospitals, is the bible of the fracture room.—I am, etc.,

C. CRAIG.
General Hospital, Launceston, Tasmania. Surgeon-superintendent.

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1 3rd edition, 1943, p. 681.
2 *Papers and Addresses in Surgery*, 1923, p. 272.
3 *Med. J. Austral.*, Dec. 29, 1928, p. 808.
4 Ibid., Sept. 25, 1937, p. 519.
5 *Papers and Addresses in Surgery*, 1923, p. 282.

## Episiotomy

SIR,—My conclusions on episiotomy (Aug. 26, p. 291) having been objected to by Drs. O'Meara (Sept. 9, p. 353) and Banks (Sept. 16, p. 385), I to-day tried the latter's tip of fully extending the primipara's legs at the hips when the head was stretching the perineum ("Trousers don't tear when you are standing, but when you are bending down"). The result was a perineal tear to within 1/2 inch of the anus, and I wished I had done an episiotomy.

Regarding my remark that I frequently give pitocin in uterine inertia when the head is well down and the os fully dilated, Dr. O'Meara says, "I don't like it, won't do it, and won't allow it to be done, even in hospital." This peremptory interdiction would carry more weight if he gave some reason for it. He has had great experience of midwifery, and arguments against the practice would be of great interest to people like myself who have consistently given pitocin before the birth of the child for many years with nothing but beneficial results. As it is, his mere negation cuts no ice whatever. Dr. O'Meara disbelieves my contention that the injection of ergometrine has banished the bogy of post-partum haemorrhage. Possibly his experience of this procedure is not so happy as mine. If so, he does not say so, nor does he adduce any instances of failure. These again would be interesting and instructive. I only give my own experience of ergometrine, not anything I have read or heard, and still retain vivid recollections of occasional awful moments, in pre-ergometrine days, of intimidating torrents of blood, frantic bimanual grabbings of uteri, and intra-uterine douches of water at 118° F. I still carry my intra-uterine douche, but only as a talisman. Dr. O'Meara "strongly disagrees with the practice of giving ergometrine before the placenta is expelled." So do I, *as a practice*. Why? Because years ago, in ignorance or without thinking, when ergometrine was first put on the market, I thus gave it on one occasion, with the result that the uterus snapped down on the placenta like a vice and it took a large part of the staff of a gynaecological

ward in hospital two days to get it out. But circumstances alter cases, and a few weeks ago, after chloroform delivery and before expulsion of the placenta, I had a powerful hunch that I was going to get a bad p.p.h., and knowing that ergometrine injected intramuscularly takes 4 minutes to act, I risked it just before squeezing out the placenta. My hunch proved correct, as even then the patient lost a little more blood than normal, and I agreed with the nurse when she said, "We should have had some trouble with her if you had not given that."—I am, etc.,

Stowmarket, Suffolk. H. S. GASKELL.

### Nystagmus in Anxiety States

SIR,—It is not generally realized that lateral nystagmus may be a prominent feature in some of the patients who suffer from acute anxiety states. Nearly 17% of a group of patients who broke down under the stress of intense enemy action developed varying degrees of nystagmus, which, in the majority, disappeared quickly under rest and sedation. In a few patients, however, it persisted for several weeks. Nystagmus in these patients appears to be part of a process of temporary disintegration, similar to that responsible for producing generalized tremor of the limbs or stutter or temporary loss of bladder control. This is worth emphasizing in order to avoid prolonged investigation and unnecessary hospitalization of these patients.—I am, etc.,

London, N.W.7. M. N. PAI.

### Débridement

SIR,—With reference to the letter on débridement (Sept. 16, p. 387), may I add a brief note.

The word was frequently used (and not infrequently misused) in the earlier years of the present war. In a review by Mr. (now, I believe, Major-Gen.) W. H. Ogilvie of "War Primer" in the *Bulletin of War Medicine* (1941, **1**, 138), dealing largely with gas gangrene, he states: ". . . débridement, a term used to describe the excision of the whole wound track and of damaged or devitalized structures around it, the removal of blood clot, dirt, and foreign material, and the complete arrest of haemorrhage."

Also, in an earlier issue of the same *Bulletin* (1941, **1**, 3), Mr. Reginald Payne, reviewing an article by Hoche in *Med. Klin.*, speaks of "surgical revision" of wounds, and adds the following note: "The term 'surgical revision' is one which has recently been introduced and includes the following: (1) examination of a serious wound under anaesthesia; (2) determination of its extent; (3) removal of dead tissue and foreign bodies; (4) arrest of haemorrhage; (5) provision of drainage, if required. It will be seen that 'revision' includes considerably more than the French term 'débridement.'"—I am, etc.,

Braintree, Essex. H. HAROLD SCOTT.

### Prevention of Industrial Dermatitis

SIR,—I am grateful to Dr. Mummery for his further letter (Sept. 16, p. 387). If he publishes figures he takes the risk of having them read and having the reader draw his own conclusions. My quotation of 203 cases in 3,850 workers is still the total in Dr. Mummery's cases.

The fact that Dr. Mummery failed to protect his workers against paraffin and oil with barrier creams is suggestive that he did not use the correct protection. There is no one satisfactory barrier cream. Specific hazards must be protected by specific barriers.

I have recently investigated the risk of dermatitis in the photographic industry, and I learn that the common solutions in which photographers put their hands vary from *p*H 4.2 to *p*H 11, and it is the habit of these workers to put their hands into one solution and then another many times in the course of their work, and it is impossible to wash except at the end of a batch of printing and developing. It requires no imagination to see that far more than cleansing is necessary here. As a sufferer myself from sensitization and dermatitis due to so-called metol poisoning I have found that I now can pursue my hobby without risk if the correct barrier cream is used.

In Dr. Mummery's own field it is evident that the workers in America take far more recognition of the sensitization dermatoses. Fletcher Hall,[1] in a recent article of great importance to this industry, stated that oil folliculitis and chloracne were the only industrial dermatoses of major importance to the aircraft industry on which adequate studies have been published, and reference is made in the article to Schwartz and Russell, "Skin Hazards in Airplane Manufacture."[2] Hall found after an investigation of 580 cases of dermatitis (210 non-industrial) in 65,000 employees in an aircraft company that sensitivity is a major factor. Schwartz[3] in the same issue of the *Journal of the American Medical Association* dealt with dermatitis from explosives, and makes the alarming statement that 30% of tetryl workers had dermatitis in the first six months. He recommends a protective. Peck, in the same issue,[4] "Dermatitis from Cutting Oils, Solvents, etc.," states: ". . . exposed parts such as the face should be covered with protective ointments of the invisible glove type reinforced with inert powders." He also advocates adequate washing facilities and the use of the aliphatic alcohol sulphates or alkylated argylsulphonate, which removed dirt more eosily than soap. Schwartz, the eminent American industrial dermatologist, in the article previously quoted,[3] goes through the whole of airplane manufacture—anodizing, degreasing, dope, hydrofluoric acid, machine shop, paint, plaster, welding, zinc chromate, etc.—and in his summary, which was the result of an inspection of aircraft factories employing over 100,000 men, he came to the following conclusions: "Preventive measures consisting of wearing of impervious clothing, the use of protective ointments, and the use of non-irritating skin cleansers, in addition to proper general and local ventilation, etc."

My own experience is such that I am not satisfied with any one method of protection, and as this is in line with the recommendation of Dr. Schwartz I shall continue to recommend protection in every possible way.—I am, etc.,

London, N. L. B. BOURNE,
Medical Officer, A. C. Cossor, Ltd.

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2 *Publ. Hlth. Rep. Wash.*, 1941, **56**, 1581.
3 *J. Amer. med. Ass.*, 1944, **125**, No. 3, 186.
4 Ibid., p. 190.

### Infantile Gastro-enteritis

SIR,—In your leading article (Sept. 30) you say Drs. Alexander and Eiser "stress the aetiological role of parenteral, particularly upper respiratory, infection in gastro-enteritis." At a post-mortem on a three-months-old child whose death was due to gastro-enteritis I found a spheno-ethmoiditis with yellow pus (illustrated at p. 5, *Sinusitis and Mental Disorder*, 1935), the whole gastro-intestinal tract appearing almost normal, thus confirming the association and suggesting an aetiological relationship of the conditions.—I am, etc.,

Birmingham. F. A. PICKWORTH.

### Artificial Insemination

SIR,—May I ask that the *Journal* will use its influence to obtain for the rank and file of the medical profession an authoritative pronouncement regarding the ethics of artificial insemination.

A patient of mine, while attending a birth control clinic, was recently asked if her husband would be willing to act as a donor for an artificial insemination panel. The lady was shocked and asked my advice about the whole question, being quite bewildered that such a request could be made to her on such an occasion. The question is one in which the public confidence in the medical profession is likely to be involved. If, without the knowledge of her husband, and without legal formalities of any description, a woman visiting a doctor's consulting-room can ethically be inseminated with the genes of an unknown male parent, the confidence of the general public in the profession may be impaired.

The Church, having for years condemned lust without procreation, may find difficulty in pronouncing upon the question of procreation without lust. The medical profession undoubtedly must take a leading part in guiding the general public on this

most difficult subject. Could we not have a considered pronouncement from a high authority on medical ethics, such as the General Medical Council, to guide the members of our profession, whose privilege it will be to educate the public in this most difficult problem of human relations? Should we fail in this respect we may find that the present veterinary approach to this problem may persist and discredit our humanitarian traditions.—I am, etc.,

Barnstaple. RICHARD HARPER.

## Bequests to Anatomy Schools

SIR,—There appeared in the *Daily Telegraph* of May 9 this year a short appeal from Dr. Neville Goodman, H.M. Inspector of Anatomy, to the medical profession to give a lead to the public by bequeathing their remains to the schools of anatomy. There must be many like myself who are willing and prepared to do this; all the more so when it is realized what is happening to so many young bodies on the various "fronts."

I suggest that arrangements could be made to form an association affiliated to the Cremation Society (of which I am a member). The society could estimate the cost of collecting from the medical schools the remains allocated to any particular individual. These could then be cremated and the ashes disposed of according to the wishes of the deceased or nearest relative, the charge for doing this to be taken from the entrance fee to such an association.—I am, etc.,

"DELTA."

## Service Medicine

SIR,—There seems to me to be some confusion of thought on this subject. There is a considerable difference between "Services 'medicine'" and "medical services."

When a doctor is commissioned as a *regular* medical officer he is assumed—for the moment—to know all about medicine, surgery, and midwifery by virtue of his registrable qualification, so his training in administration begins. He has to learn that for every clinical act there is a corresponding administrative act, even though it only be filling in the "Disposal" column and signing a sick report. In addition to this he has to render certain necessary returns, some daily, some weekly; others monthly, quarterly, or even perhaps half-yearly. To omit rendering these to the proper authority is to delay the rendering of returns on the part of those whose duty it is to consolidate the returns received from lower formations. Moreover, by his signature of these returns the medical officer accepts responsibility for their accuracy. Delay and inaccuracy are two of the unpardonable sins.

He has to learn the system of store accounting, including the preparation and forwarding of indents and receipts for medical stores. When they arrive he, as a medical officer, must "take them on charge" in his medical store account, which keeps a record of all receipts and expenditure. He must report deficiencies and breakages on the appropriate form and attribute blame to individuals responsible. He must keep a record of the patients he sees, with his provisional diagnosis of each, and state the disposal of the cases.

As he becomes more senior in rank he learns about the procedure with regard to medical boards, invaliding, etc., as well as the method of dealing with claims for payment from civil practitioners for attendance on Service personnel, and many other administrative details too numerous to mention here. At the same time he does actual medical work in dealing with the sick. Some he treats; others he may refer for treatment to hospitals or specialists. Then he has to act as the medical adviser to his commanding officer, and as such is responsible for camp or other sanitation and keeping a sanitary diary, as well as making application for urgent repairs to anything needing such which may come to his notice, whether they be blocked drains, leaky taps, or broken windows. But these are mostly items of *administration*.

In time of war the great reserve of all the medical services is the civil medical profession. The regular officer will probably be promoted to acting rank one or two or more steps higher, and, unless he be a surgical, medical, or other specialist, he will find himself in a more senior administrative post, because he has been properly trained in medical administration. The called-up civilian is more likely to be engaged in clinical work of some kind, and only such administrative activities as the nature of his employment demands—e.g., recording the patients seen and their treatment or disposal.

So far as Service *medicine* is concerned, it may be like general practice on a small scale (including families), or it may be actual hospital practice if he be in a military hospital, and it is his duty to maintain the high level of efficiency which is in peacetime the rule in all Service hospitals. He has to realize—getting down to "brass tacks"—that he is employed by the State as a "money saver," in that he should aim so far as possible to *prevent* sickness and other casualties partly by advising his commanding officer; or, when these occur, that invalids must be restored to the active list with the loss of as few man-hours as possible. To do this he must be an efficient doctor—whether as physician or surgeon. The principles of surgery and medicine in the Services do not differ one whit from those in civil life—which is to say that "Service medicine" in its principles and practice does not differ from "civil medicine." I will go further, and say that in peacetime there are opportunities for doing good work in Service hospitals such as will probably not be found outside teaching hospitals. Grumbling about "Service medicine" by temporary officers serving in wartime has not been unknown in previous wars. Everything depends on the man himself; and the first thing he should learn is not to confuse Medicine with Administration.—I am, etc.,

"UNCLE HARRY."

SIR,—Whatever mistakes the Government may commit in the years of transition from war to peace, it is not likely to repeat the disastrous blunder of 1919, when our defences were so recklessly shorn away. Compulsory training in the Navy, Army, or Air Force has, in fact, already been announced for all boys and youths after the war, so that Service medicine will for many years cover a wider field than it did in the 1920's and 1930's. Directly or indirectly, whether we realize it or not, all of us are vitally concerned in the impending reform of Service medicine, whose existing faults I emphasize with constructive, not recriminatory, intent.

The hospital secretary and his lay staff hold an honoured position in the world of civilian medicine, and the appointment of medical men as hospital secretaries would mean a waste of medical training—to say nothing of the objection that medical men would fill such posts less efficiently than their present occupants. Yet the Services persist in using qualified medical men to do work requiring less knowledge of medicine than is possessed by the average hospital secretary; and such people must, according to Major C. H. Pauli (Sept. 23, p. 417), "be given sufficient rank in order that medical policy may be fully stressed and enforced." That is pure bunkum. If Major Pauli were ill with pneumonia he would doubtless desire treatment from the supposedly best doctor available, irrespective of rank. Similarly, a layman of any intelligence hearing an opinion with regard to medical policy would be impressed rather by the sponsor's professional status than by his gold oak leaves or coloured tabs.

Major Pauli's faith in the gods of administration is touching. He coolly ascribes to medical administrators the success of the Army transfusion arrangements. So far as medical men are concerned surely the chief credit belongs to: (*a*) those pathologists who established blood transfusion depots under the auspices of the Medical Research Council before the war (see Sir E. Mellanby's paper on "Medical Research in Wartime," *Journal*, 1943, **2**, 351); and (*b*) the clinicians who decided which cases were in need of transfusion, and those who performed it with the requisite dexterity. Questions of transport and distribution are admittedly vital, but their detailed solution is within the capacity of laymen so long as doctors give the necessary general guidance. Furthermore, Major Pauli is pleased to taunt me with ignorance of administration. As well might he reproach me for knowing little of instrument-making, radiological processes, hospital finance, central heating equipment, massage, and a host of other important matters in which the whole-time clinician necessarily relies upon expert auxiliaries.

Several correspondents have sought to bolster up Service medicine by reason of the skilled diagnosis and successful treat-

ment from which they have themselves benefited in the Forces. I submit, Sir, that such instances of professional skill do not constitute a valid argument in favour of Service medicine *as such*. Of course no one will deny that the Services now contain a large proportion of the finest clinicians and pathologists in the Empire. Many of your readers must have shared my delight in the tale of the Eighth Army mobile field surgical teams as vividly told by Brig. C. Donald (*Journal*, 1944, **1**, 709, 743). Nor will the most irreconcilable opponent of Service medicine *as such* seek to minimize the triumphs of Service plastic and orthopaedic surgery, and the less spectacular but equally valuable work of the general practitioner, medical officer to a unit, or M.O. in charge of a hospital medical division. Nevertheless we must remember, in apportioning the praise, that the clinical achievements of Service medicine in this war are founded mainly on pre-war training and experience *outside* the Services, and that many clinicians are handicapped by subordination to a professionally insignificant minority of high-ranking regular maladministrators who have forgotten when they last handled a patient.

Until the war stops we temporary serving officers will help to work this defective machine; but, in the interests of truth, efficiency, and the welfare of our patients we shall protest against the continuance of present abuses in time of peace. Although we are now condemned to silence or anonymity we shall not always remain under the censorship of "brass hats." Much will be said later.—I am, etc.,

"Temporary Serving Officer."

### The Young Married Doctor

Sir,—With regard to recent correspondence on medical education, both pre- and post-graduate, I think there is one point which is often overlooked: that is, the influence of marriage upon a newly qualified doctor's choice of career.

After a very long undergraduate course the young doctor, apart from financial considerations, which are often weighty in view of current residency salaries, has a choice to make. If he wishes to specialize he must deliberate the old truism about marital refrigeration. In other words, he is asked to spend another lengthy period wholly unnaturally to attain that goal. As we as a class show no variation from the general public biologically, an initial loss of recruits occurs shortly after qualification. How many know only too well the fatal effect of an honest answer to the question, "Married or single?" upon an application for a hospital post. I have personally found this to be true, even in these days of shortage and being rejected for the R.A.M.C.

Could not, therefore, this simple reform be considered amid all the welter of projected contemporary schemes—namely, more provision for married men in senior hospital resident posts after twelve or eighteen months' postgraduate experience? It is not asking for a great deal when balanced with what sacrifice has already been made in comparison with most professions. It seems to me that unless this is done an even greater loss will occur after the war. Can anybody reasonably expect a Service M.O. (many of whom are married) away from his family for perhaps years to be willing to continue even part-time separation for a number of years after the conclusion of hostilities? If this be true of wartime, how many in peacetime sacrifice keenness for domesticity when both can be combined without loss of efficiency.—I am, etc.,

"Y.M.D."

### A Bouquet

Sir,—May I be permitted to express my admiration for, and thanks to, the Editor and staff for the magnificent way in which the high standard of the *Journal* has been maintained throughout the past five years of war?—I am, etc.,

London, S.W.5. R. E. Palmer Field.

***We thank Dr. Palmer Field and the many correspondents who have written to the same effect in private letters.—Ed., *B.M.J.*

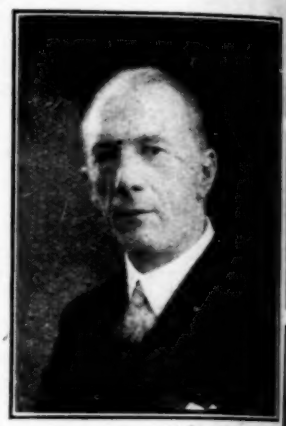
D. Polowe (*J. Amer. med. Ass.*, 1944, **124**, 771) records a case of splenectomy in the eighth month of pregnancy complicated by thrombocytopenic purpura haemorrhagica in a 2-para aged 29. A large splenoma was found. The patient was delivered of a normal infant about two weeks before the estimated term.

# Obituary

## Sir JOHN LEDINGHAM, C.M.G., F.R.S., LL.D., D.Sc., M.B., F.R.C.P.

With the death of Sir John Ledingham on October 4 pathology and bacteriology lose a most distinguished figure, whose whole life was devoted to the prosecution of research and the encouragement of fellow workers. He served the Lister Institute of Preventive Medicine for 38 years in all, becoming Director in January, 1931, after a long period as head of the department of bacteriology, serology, and experimental pathology.

John Charles Grant Ledingham was born at Boyndie, Banffshire, in 1875, son of the Rev. James Ledingham, minister of the parish, and from the local public school went to Banff Academy and thence to the University of Aberdeen, where he graduated M.A. in 1895, with first-class honours in mathematics and physics, and won the Simpson and Arnott Prizes. His career in the Faculty of Medicine was no less brilliant; after winning two gold medals he took the B.Sc. degree (with distinction) in 1900 and the M.B. (with honours) in 1902, and then held the Anderson scholarship. Post-graduate study at Leipzig University and at the London Hospital led to his appointment to the staff of the Lister Institute in 1905, and after a few months in the serum department at Elstree he was transferred to the main Institute on Chelsea Embankment as assistant bacteriologist; he became chief bacteriologist in 1908 and succeeded Sir Charles Martin as Director from 1931 to 1943. In 1920 the University of London granted him the title of Professor of Bacteriology, and as head of the bacteriological department of the Lister Institute he helped in every way the investigations of members of his own staff and of all research scholars or voluntary workers, native or foreign, attached to the department, including graduates conducting research with a view to the higher scientific degrees of the university. During his tenure of one of the most responsible posts in preventive medicine he proved himself a capable administrator, while inspiring those who worked under him and pursuing his own experimental studies on viruses and virus diseases and a wide range of other subjects. The establishment of the National Collection of Type Cultures was one of the many projects that gained his warm support.



[*Lafayette, Ltd.*

The Governing Body of the Lister Institute took pride in the outstanding contributions to scientific knowledge for which Ledingham had been responsible through his own researches and through the many investigations carried out under his friendly guidance and stimulus by members of the staff and others enjoying its scientific hospitality. His wide knowledge, sound judgment, and personal distinction as an investigator in the fields of pathology, bacteriology, and immunity enabled him to render to the Government and the nation services of great importance, which were recognized by the public honours he received, including the C.M.G. in 1918 for his work in the last war, election as F.R.S. in 1921, his knighthood in 1937, the honorary LL.D. of his own university (Aberdeen), the Sc.D. of Dublin and D.Sc. of Leeds, and the title of Professor Emeritus of Bacteriology conferred on him this year by London University. He was a member of many expert scientific committees and chairman of the Tropical Disease Committees of the Medical Research Council and the Royal Society. He presided over the second International Congress for Microbiology held in London in 1936, and was honorary president of the third Congress held in New York in 1939. Some thirty papers were published under his name or in collaboration with

others during the period 1920–43, and a book written jointly with his colleague Sir Joseph Arkwright, *Carrier Problem in Infectious Diseases*, came out in 1912. He delivered the Harben Lectures on "Some Problems of Natural Immunity" in London in 1924, and ten years later the Herter Lectures in Baltimore, describing his studies on viruses up to that time. In the work that led to the publication in 1933 by the M.R.C. of the *Treatise on Diphtheria*, and the publication in 1930–1 of the encyclopaedic *System of Bacteriology* in nine volumes, Prof. Ledingham took a full share as contributor and associate editor.

He was elected a Fellow of the Royal College of Physicians of London under the special by-law, had been examiner for the College, and also served as a member of its Council. During the last war he held the rank of lieut.-colonel, R.A.M.C., took charge of the bacteriological department of the King George Hospital for a year, was a member of the Medical Advisory Committee in the Mediterranean, and became consulting bacteriologist to the Forces in Mesopotamia. In the British Medical Association, which he joined 40 years ago, he was secretary to the Section of Bacteriology at the Annual Meeting of 1910, vice-president of the Section of Pathology and Bacteriology in 1912 and again in 1914, and presided over that Section in 1925.

## ALFRED C. COLES, M.D., F.R.S.Ed.

Dr. Alfred Charles Coles died on Sept. 26 at his home in Bournemouth, aged 78. He was a very expert medical microscopist and made this his hobby after retiring from active work. He had studied medicine in Edinburgh, graduating M.B., C.M. in 1889, B.Sc. in 1890, M.D. in 1893, and D.Sc. in Public Health in 1903; he took the M.R.C.P.Lond. in 1907. Before settling in practice as a physician Dr. Coles had been house-surgeon for a year at the East Suffolk and Ipswich Hospital, and for three years at the County Hospital, York, later serving as R.M.O. at Queen Charlotte's Hospital. He was elected physician to the Royal National Sanatorium in 1914 and to the Royal Victoria Hospital, Bournemouth, in 1919, having served during the last war as medical officer in charge of the bacteriological laboratory of the Military Hospital at Mont Dore. He joined the B.M.A. in 1891, and had been president of the Bournemouth Medical Society. He wrote three books: *Clinical Diagnostic Bacteriology* (1904); *The Blood: How to Examine and Diagnose its Diseases* (1905), which went into a third edition; and *Critical Microscopy* (1921). His last published writing appeared in these columns on Oct. 11, 1941, under the title "The Size and Visibility of the Filterable or Virus Bodies."

Dr. Mervyn H. Gordon, F.R.S., writes:

Coles was a master of the microscope, the range of which he showed to be far higher than others realize. He concentrated on diseases of unknown aetiology, and succeeded in finding in many of them bodies that may or may not prove ultimately of causal significance. He acquired a superb technique, and when in Hodgkin's disease, after other agents had been excluded, elementary bodies were found, Coles, at first sceptical, was not satisfied merely with confirming it. He sent me wonderful photographs of these bodies—stained and unstained—side by side with similar virus bodies, the established organism of vaccinia. A great investigator.

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The following well-known medical men have died abroad: Dr. Yandell Henderson, emeritus professor of physiology, Yale University, aged 70; Dr. Charles Henry May, a prominent ophthalmologist whose *Manual of Diseases of the Eye* went through 18 editions, aged 83; Dr. Warren Taylor Vaughan, editor of the *Journal of Laboratory and Clinical Medicine* and an authority on allergy, aged 51; Dr. Jose Guiterez, extraordinary professor of radiology and physiotherapy at Buenos Aires; Dr. Carl Koller, an eminent ophthalmologist of New York, formerly of Vienna, celebrated for his work on cocaine as a local anaesthetic, aged 86; Dr. Charles Wults Bury, emeritus professor of mental disease at the University of Pennsylvania department of medicine, aged 82; Prof. Pierre Nobécourt, the eminent Paris paediatrician, aged 72; Dr. Arthur Moncorvo Filho, a pioneer in paediatrics and infant hygiene in Brazil, aged 73; and Dr. Franz Chovstek jun., formerly professor of internal medicine and director of the Third University Clinic in Vienna, aged 79.

## LEWIS SMITH, M.D., F.R.C.P.

Consulting Physician to the London Hospital

Dr. Lewis Albert Smith, who died in retirement on Sept. 17 at Criccieth aged 75, served the London Hospital as assistant physician and physician from 1902 to 1927, when he was elected to the consulting staff.

He was born at Chelmsford on May 8, 1869, third son of Joseph Alfred Smith of that town, and entering the London Hospital Medical College in 1889 won the Letheby scholarship in chemistry and graduated M.B.Lond., with honours in forensic medicine and obstetric medicine after qualifying in 1895. He took the M.R.C.P. in 1901, and in the following year qualified for the gold medal at the M.D. examination. His teaching career at the London Hospital began as medical tutor, and before he was appointed to the visiting staff there he had been physician to the Eastern Dispensary in Whitechapel and to the Poplar Hospital. He was elected F.R.C.P. in 1910, and represented the College as examiner in medicine on the Conjoint Board in 1923–6. Recognized by his house-physicians and clerks as a sound teacher of clinical medicine, Lewis Smith built up a large consulting practice. He inspired warm feelings in his juniors, and had the gift of keeping up old friendships. He contributed articles to Allchin's *System of Medicine* and to Hutchison's *Index of Treatment*, and was the author of a little waistcoat-pocket book, *Golden Rules of Medical Practice*, which epitomized common sense and knowledge of human nature in the form of dry aphorisms. Lewis Smith abstained from public occasions and medical politics; he joined the B.M.A. in 1906, but after acting as secretary of the Section of Medicine at the Annual Meeting of 1909 he took no further part in its business.

Sir Frederick Menzies writes:

The news of the death of Dr. Lewis Smith, or "L. A.," as he was affectionately called by many of his friends, will have been received with deep regret by a large circle of his old colleagues, students, and friends, particularly of the London Hospital. For the last four years he had been living in peaceful retirement at Criccieth, North Wales, and although it had become necessary for him to live a semi-invalid life for the greater part of this period, he always continued to take a remarkably keen interest in all the developments of wartime, at home and abroad. In addition, he kept closely in touch with a large number of his old friends in all parts of the world by means of an extensive correspondence and by the periodical issue of brief brochures, in the course of which he related various interesting experiences of his favourite pastime of fishing. Despite his severe physical disabilities, which made movement very difficult for him in recent years, he was marvellously cheerful, alert-minded, and loved a good long talk about all kind of problems—medical, political, economic, literary, etc. He possessed a powerful personality and expressed himself clearly, concisely, and strongly upon any subject in which he was interested, so that there was never any doubt about his views. Nevertheless, he did not arrive at his opinions without considerable and careful thought, and there was never a more warm-hearted, generous friend than "L. A.," and not only to his friends but to many lame dogs whom he helped over a difficult stile. The sudden and unexpected death of his brother-in-law, Sir Hugh Rigby, with whom he had been very closely associated all through his professional life and to whom he was extremely devoted, came as a terrible shock and deep sorrow to "L. A.," and was greatly accentuated by the almost simultaneous deaths of two other very old friends—Hurry Fenwick and Wilfred Hadley. I cannot conclude without paying humble tribute also to the devotion and loving care bestowed upon him ceaselessly by his wife. It was my privilege to be with them on the day, quite recently, when they celebrated the fortieth anniversary of their wedding day and to witness their mutual happiness when congratulatory telegrams and letters poured in from relatives and friends at home and abroad. Like many other of his friends I shall sadly miss "L. A."—with whom I have spent many happy hours.

The death took place at his residence in Sunderland on Sept. 1 of Dr. Richard Henry Dix, aged 68, after a long illness. He was born in Sunderland and studied medicine at Durham and Dublin Universities. He graduated M.B., B.S.Durham with honours in 1900 and took the M.D. in 1902. In 1914 he obtained the M.R.C.S.Eng. and L.R.C.P.Lond. diplomas. After holding appointments as assistant demonstrator of pathology, anatomy, and physiology at Durham University he settled in Sunderland, where in an extensive private practice his patients were fortunate in having the benefit of his unusual skill and clinical judgment. His reputation as a family doctor in the best tradition was well recognized among his colleagues. In his early days Dr. Dix was somewhat of a local pioneer in radiology, which he carried out with apparatus installed in his surgery. His enthusiastic work in connexion with local medical organizations was well known, but by many of the public he will be gratefully remembered as honorary surgeon to the Sunderland Children's Hospital. It was there that for many years he gave much of his time and interest to work to which he was particularly devoted. Until the time of his illness he had been hon. secretary of the Sunderland Medical War Committee.

A veteran member of the B.M.A.—Dr. John Hutton Balfour—who joined it in 1887, died at Gullane on Sept. 15, aged 84. He graduated M.B., C.M.Ed. in 1881, and after serving as resident surgeon at the Royal Infirmary, Edinburgh, practised for more than 57 years in the Portobello and Niddrie districts. At the close of 1931 he received a presentation at a public meeting at Newcraighall, Midlothian, when the chairman said that Dr. Balfour had succeeded his father and brother, so that his family had then practised medicine in the neighbourhood for 78 years. Before the introduction of the National Health Insurance scheme "Dr. John," as he was widely and affectionately known, was, in addition to his ordinary work, medical officer to a number of collieries. He retired from practice seven years ago. He had taken a large part in the social and athletic life of the district and was himself a keen rugby football player and golfer in his younger days, and greatly interested in rowing and bowling. He was proud of having brought into the world almost 6,000 babies, and in doing this had lost only six mothers, one of them a woman at the point of death whom he was called in to on passing the house.

Dr. Henry Alfred Leebody, who died on Sept. 19, was the second son of Prof. Leebody of MacGee College, Londonderry, and, through his mother, was a direct descendant of John Knox. After a B.A. course in Ireland he went on to study medicine in Edinburgh, where he graduated M.B., C.M. in 1895. For a quarter of a century he was in general practice in the village of Corstorphine, now a suburb of Edinburgh, and he found an outlet for his inborn love of soldiering in service with the Queen's Edinburgh Rifle Volunteer Brigade, and later, on the formation of the Territorial Army, with the 3rd Lowland Field Ambulance. Shortly after mobilization on the outbreak of war in 1914 he was posted to the Scottish Command as D.A.D.M.S., where he became before the end of the war A.D.M.S., with the substantive rank of colonel. Disappointed in his hopes of further military service by the descent in 1920 of the "Geddes axe," he was fortunate in obtaining congenial work on the tribunals of the Ministry of Pensions until 1927. For the next 10 years he served as ship surgeon with the P. & O. line, which afforded him a welcome opportunity of travel and provided him with leisure to develop his remarkable gifts as an artist both in black-and-white and in colour. Dr. Leebody was a typical Irishman, keenly observant, humorous, kind-hearted, and generous. He was tall and strongly built and apparently incapable of fatigue. Throughout his life he was, to everyone with whom he came in contact, a true guide, philosopher, and friend, and an unfailing source of strength and inspiration. His son, Dr. John Leebody, is the medical superintendent of St. George-in-the-East Hospital, Wapping.

We regret to announce the death in retirement at Redlynch, near Salisbury, of Dr. Thomas Gillespie, late honorary physician to the Southampton Children's Hospital, who represented his Division at the Annual Meeting of the B.M.A. in 1922. He began the study of medicine at Cambridge, taking his B.A. in the Natural Sciences Tripos of 1897, and after qualifying in 1900 became H.P. at Bart's and assistant H.P. at the Metropolitan Hospital. He took his M.A., M.B., B.Ch. degrees at Cambridge in 1901, and served during the last war as temporary captain, R.A.M.C. Dr. Gillespie was a co-founder of the Children's Hospital at Southampton and a member of the Board of Management from 1908 until he retired in 1938: a ward is now called after him. He was also an original member of the Itchen, Romsey, and District Local Medical Service—one of the first in this country (1921)—and its chairman for over 20 years. His charm was the most typical feature of an all-round rare personality. A medical colleague writes: So Tom Gillespie has gone, and with him something of sweetness and light has passed for ever from the earth. For Tom, as he was universally called, had above everything the great gift of friendship. Few men can have had more friends, and no one was ever less likely to have an enemy. Coming to Southampton some 40 years ago, after a noteworthy hospital career, he very quickly gained the affection and trust of his patients and the high regard of his professional colleagues for his skill. His best-known work was probably his connexion with the Children's Hospital, the fortunes of which he helped to guide with great wisdom for many years. For Gillespie was a man of a very matured and sane judgment; every committee of which he was a member—and they were numerous—came to rely more and more on his opinion. Few can have been called on more often by all sorts and conditions of men for advice and help in personal troubles, for he saw life steadily, and he saw it whole. It was a great blow to his professional friends and to his many patients, when an increasing lameness, borne, as would be expected of him, with courage and patience, led to his retirement shortly before the war; but we all hoped he would enjoy many years of happiness, for with his great intelligence and his varied interests, life still held much for him.

# Universities and Colleges

## UNIVERSITY OF LEEDS

The inaugural lecture in the Faculty of Medicine of the University of Leeds will be given by Sir Joseph Barcroft, C.B.E., F.R.S., in the Riley Smith Hall of the University Union at 3 p.m. on Thursday, Oct. 26. Subject: Problems in Foetal Life. Members of the medical profession are cordially invited to be present.

# Medical Notes in Parliament

### Hospital Accommodation in London

On Sept. 26 Sir E. Graham-Little asked the Minister of Health whether he was aware that through recent requisitioning of another 50% of beds in the London hospitals, occasioned by the opening of the second front, the admission of civilian patients to the London hospitals had become almost impossible; and whether he would release for civilian use a proportion of the empty beds reserved for military casualties. Mr. Willink: As part of the plans for receiving casualties from Western Europe hospitals throughout the country were asked to restrict the admission of civilian patients, the aim being to reduce occupancy on the average to about 50% of the beds. In some hospitals this step was necessary in order to secure more beds for the casualties, and in others, notably in London, to set free staff for the hospitals specially designated to receive the casualties on arrival in this country. At the same time it was made clear that the restrictions were not to be applied to patients in immediate need of treatment in hospital. In view of recent developments of the war situation, my officers are now arranging for the restrictions to be relaxed, bearing in mind the varying needs at each hospital of civilian and Service patients respectively.

### Mass Radiography in Liberated Countries

On Sept. 26 Mr. Parker asked the Minister of Health whether he would consider supplying a limited number of mass radiography sets, from the stock of apparatus ordered by the Ministry from British manufacturers, to the Allied Governments that they might be able to estimate the extent of the tuberculosis problem in their countries after liberation; whether training would be provided through the Ministry's special training course to such Allied mass radiography teams as required it; and whether the co-operation of British tuberculosis experts would be available to assist and advise the Allied Governments in their antituberculosis work. Mr. Willink said that the question of making mass radiography apparatus available to the liberated countries was outside his responsibility, but it was under consideration by UNRRA. In regard to the last two parts of the question he would be glad to render all the assistance in his power.

### Production of Penicillin

In reply on Oct. 4 to Col. Lyons Sir ANDREW DUNCAN said that seven plants, six of which were pilot plants, were producing penicillin in this country. Nine large-scale plants were expected to come into operation within the next six months. Two of them were about to start production. The Government was in the closest touch with organizations in America and Canada and had the active assistance of one of the American firms in one of the plants it was putting up.

### Local Authority Hospitals

Answering Sir Ernest Graham-Little on Oct. 5 Mr. WILLINK said that apart from specialized institutions, such as mental hospitals, maternity hospitals, infectious diseases hospitals, and sanatoria, the number of beds contributed by institutions and hospitals under the control of local authorities in England and Wales was 131,440. Of these 73,921 were in 154 general hospitals and 57,519 in 376 institutions for the sick, infirm, and mental cases. About 390 of the hospitals and institutions were administered under the Poor Law.

*D.D.T. against Flies and Lice.*—On Sept. 26 VISCOUNT CASTLEREAGH asked the Minister of Production if, in view of the large increase in the number of flies and other germ-carrying insects and the danger of a corresponding increase in disease, he would make available to the public the disinfectant, dichlorodiphenyltrichloroethane. Mr. LYTTLETON said that the total production of D.D.T. available to the United Nations was at present required for military use, and it was not possible to release any for general civilian use. A small quantity had, however, recently been allocated to the Ministry of Health for use in air-raid shelters. Raw materials for effective fly sprays had been available to manufacturers during 1944.

*Notes in Brief*

Provision of homes for the chronic sick and the permanently incapacitated is one of the aspects of the National Health Service which are engaging the attention of the Minister of Health.

It is estimated that the balance in the approved societies' current account under the National Health Acts at June 30, 1944, was £13,300,000 and the cost price of investments at that date £104,400,000.

The Government of Nigeria is educating the public in the dangers of fraudulent drugs and considering whether legislation should be introduced controlling advertisements of them.

## EPIDEMIOLOGICAL NOTES

### Discussion of Table

In *England and Wales* notifications of measles were 354 higher than last week, scarlet fever 105 higher, and diphtheria 25 higher. Notifications of acute pneumonia rose by 144 after being practically constant for seven weeks.

Measles is prevalent in the north. Lancashire reported 191 more cases than last week, and Cheshire 43. Lancashire also had 43 more cases of scarlet fever, and Glamorganshire 27. There were 24 fewer cases of whooping-cough in the whole country, although in Lancashire the total rose by 54.

No new outbreaks of dysentery were reported, but there was a rise in incidence in most of the existing outbreaks, the total cases, 365, being 14 higher than last week. The largest returns were Essex 36, Glamorganshire 35, London 34, Surrey 27, Dorsetshire 26, Hertfordshire 26, Sussex 26, Lancashire 24, Kent 17. Only 1 case was reported from the outbreak in Staffordshire and 4 from Derbyshire, where 21 and 23 cases respectively were notified last week.

In *Scotland* notifications of acute primary pneumonia went up by 51, of scarlet fever by 69, of dysentery by 30, and of measles by 28, but there were 31 fewer cases of diphtheria and 27 of whooping-cough. The rise in dysentery was due mainly to increases in the 47 cases notified in Edinburgh and the 55 in Glasgow.

In *Eire* 117 fewer cases of diarrhoea and enteritis were reported, but the incidence is still high, 68 notifications.

In *Northern Ireland* the notifications of diphtheria rose by 21, while those from measles and scarlet fever fell by 5 each.

### Week Ending September 30

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,828, whooping-cough 982, diphtheria 545, measles 2,015, acute pneumonia 479, cerebrospinal fever 39, dysentery 351, paratyphoid 11, typhoid 11, poliomyelitis 20, polio-encephalitis 2, encephalitis lethargica 2.

No. 38

## INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Sept. 23.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

*Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for:* (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

| Disease | 1944 (a) | (b) | (c) | (d) | (e) | 1943 (Corresponding Week) (a) | (b) | (c) | (d) | (e) |
|---|---|---|---|---|---|---|---|---|---|---|
| Cerebrospinal fever | 33 | 6 | 20 | 4 | 1 | 49 | 6 | 10 | — | 2 |
| Deaths | | 2 | — | | | | — | — | | |
| Diphtheria | 566 | 17 | 152 | 86 | 36 | 757 | 39 | 167 | 103 | 25 |
| Deaths | 8 | 1 | 1 | 1 | — | | 2 | — | 3 | — |
| Dysentery | 365 | 34 | 134 | — | — | 270 | 42 | 71 | 1 | — |
| Deaths | | | | — | — | | | | — | — |
| Encephalitis lethargica, acute | 1 | — | 2 | — | — | 4 | — | — | — | — |
| Deaths | | — | | | | | — | | | |
| Erysipelas | | | 37 | 15 | 2 | | | 63 | 6 | 3 |
| Deaths | | — | | | | | — | | | |
| Infective enteritis or diarrhoea under 2 years | | | | 68 | | | | | 140 | |
| Deaths | 67 | 3 | 38 | 17 | 5 | 61 | 10 | 16 | 30 | — |
| Measles* | 1,509 | 19 | 156 | 7 | 19 | 466 | 36 | 31 | 9 | 3 |
| Deaths | — | — | — | — | — | | — | 1 | — | — |
| Ophthalmia neonatorum | 74 | 6 | 12 | — | — | 70 | 2 | 12 | — | — |
| Deaths | | | | | | | | | | |
| Paratyphoid fever | 8 | — | 2† | 1 (B) | — | 14 | 2 | 1 | — | — |
| Deaths | — | — | — | — | — | — | — | — | — | — |
| Pneumonia, influenzal‡ | 435 | 15 | 14 | 2 | 1 | 356 | 14 | 3 | 1 | 1 |
| Deaths (from influenza) | 10 | — | — | — | — | 9 | 1 | 3 | — | — |
| Pneumonia, primary | | | 219 | 18 | | | | 135 | 11 | |
| Deaths | | 17 | | 5 | 8 | | 15 | | 8 | 9 |
| Polio-encephalitis, acute | 1 | — | | | | 2 | — | | | |
| Deaths | | — | | | | | — | | | |
| Poliomyelitis, acute | 16 | 1 | 11 | 3 | — | 8 | — | — | 3 | — |
| Deaths | | — | | | | | — | | | |
| Puerperal fever | | 1 | 14 | | — | | — | 15 | | — |
| Deaths | | | | | | | | | | |
| Puerperal pyrexia§ | 134 | 8 | 9 | — | 1 | 149 | 10 | 5 | 1 | 2 |
| Deaths | | — | | | | | — | | | |
| Relapsing fever | — | — | | | — | — | — | | | — |
| Deaths | | | | | | | | | | |
| Scarlet fever | 1,696 | 30 | 322 | 33 | 54 | 2,772 | 260 | 337 | 50 | 69 |
| Deaths | — | — | — | — | — | — | — | 1 | — | — |
| Smallpox | — | — | — | — | — | — | — | — | — | — |
| Deaths | | | | — | — | | | | — | — |
| Typhoid fever | 12 | 2 | 2 | 11 | 2 | 3 | — | 2 | 11 | 3 |
| Deaths | — | — | 1 | 1 | — | — | — | — | — | — |
| Typhus fever | — | — | — | — | — | — | — | — | — | — |
| Deaths | | | | — | — | | | | — | — |
| Whooping-cough* | 1,059 | 57 | 64 | 25 | 3 | 1,480 | 109 | 167 | 49 | 9 |
| Deaths | 8 | — | 1 | 1 | — | 13 | 1 | 4 | — | — |
| Deaths (0–1 year) | 331 | 35 | 88 | 41 | 18 | 313 | 45 | 55 | 61 | 14 |
| Infant mortality rate (per 1,000 live births) | | | | | | | | | | |
| Deaths (excluding still-births) | 4,124 | 506 | 614 | 187 | 123 | 3,658 | 534 | 543 | 192 | 99 |
| Annual death rate (per 1,000 persons living) | | | 14·1 | 12·1 | ¶ | | | 12·2 | 12·6 | ¶ |
| Live births | 6,283 | 414 | 926 | 386 | 283 | 6,212 | 709 | 868 | 435 | 269 |
| Annual rate per 1,000 persons living | | | 18·8 | 25·0 | ¶ | | | 17·7 | 28·6 | ¶ |
| Stillbirths | 191 | 12 | 37 | | | 197 | 23 | 30 | | |
| Rate per 1,000 total births (including stillborn) | | | 38 | | | | | 33 | | |

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Paratyphoid A 1, B 1.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ Includes puerperal fever for England and Wales and Eire.

¶ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

# The Services

The R.N.V.R. Officers' Decoration has been awarded to the following: Surg. Cmdr. C. Mason; Acting Surg. Cmdr. R. F. Woolmer; Surg. Lieut.-Cmdrs. J. D. Lendrum, C. A. Mather, V. S. Hughes-Davies, J. E. L. Morris, and P. G. C. Martin, R.N.V.R.

Squad. Ldr. David Duncan Morrell, R.A.F.V.R., has been appointed O.B.E. (Military Division). The citation in the *London Gazette* reads:

In June, 1944, a Liberator aircraft crashed into the sea some distance from the shore at Littlestone and an airman of the U.S. Army Air Force was trapped in the nose of the aircraft which quickly became almost submerged. Squad. Ldr. Morrell immediately waded into the surf and attempted to swim towards the Liberator, but was unable to reach it owing to the very heavy sea and strong current. He then commandeered an amphibious vehicle which was passing along the water-front and eventually he was conveyed to the side of the Liberator. By this time the water was up to the shoulders of the trapped airman and he was suffering considerably. Displaying outstanding initiative and courage and ignoring the grave possibility of being trapped himself, Squad. Ldr. Morrell dived to the bottom of the fuselage. By using great force Squad. Ldr. Morrell tore away a part of the aircraft, which then enabled him to release the airman. Immediately afterwards he administered morphine to the suffering airman. All this took place inside the fuselage. Squad. Ldr. Morrell finally succeeded in dragging the airman clear of the aircraft and, with assistance, he got him aboard the waiting craft. Squad. Ldr. Morrell's outstanding courage and initiative saved the airman's life.

*Service Psychiatrists.*—In order to give assistance to medical officers leaving the Services and wishing to train as child psychiatrists the Child Guidance Council has set aside the sum of £500 to give grants to such medical officers with psychiatric and preferably paediatric experience. Applications will be subject to the approval of the Medical Committee. Inquiries should be sent to the Secretary, Child Guidance Council, 39, Queen Anne Street, London, W.1.

### CASUALTIES IN THE MEDICAL SERVICES

Fl. Lieut. George Edward Thomas Soden was killed by enemy action on Sept. 26, aged 35. He studied medicine at St. Bartholomew's Hospital and qualified M.R.C.S., L.R.C.P. in 1934, and held resident hospital appointments until 1936, when he entered general practice. He was commissioned as Flying Officer in the Medical Branch of the R.A.F.V.R. on July 29, 1943.

*Died.*—Temp. Lieut.-Col. Joseph Morgan, O.B.E., I.M.S.

*Died of wounds in Normandy in August, 1944.*—Capt. John Huntly Tarring Lawton, R.A.M.C.

*Died in India.*—Capt. William Raymond Thomson, R.A.M.C.

*Wounded.*—Temp. Major J. B. Menzies, War Subs. Capts. P. W. Henderson, V. F. Tyndall, P. J. R. Deller, A. A. Gregory-Dean, J. T. A. Lloyd, E. W. Moore, R. S. Smith, Lieut. T. R. Stephens, R.A.M.C.

# Medical News

The thirty-sixth annual meeting of the Medical Benevolent Society for the North and East Ridings of the County of York (including the City of York) was held, by kind permission of the York Medical Society, in the Medical Library, Stonegate, York, on Sept. 26, with the president, Dr. Wm. Murray of Hessle, in the chair. Apart from other matters, the society has had a most successful year, especially in regard to new members, of whom forty-one were elected—many of them as life members—this influx being mainly due to the recruiting energy of the president. Applications for relief and assistance were considered and grants were made. In view of the healthy state of the society's finances further investments of the credit balance were authorized; and the following officers were elected for the ensuing year: Dr. B. A. S. Belas, of Middlesbrough, president-elect; Dr. G. F. Longbotham, Middlesbrough, vice-president; Dr. D. Matheson Mackay, Hull, hon. treasurer; Dr. W. W. A. Kelly, York, hon. secretary.

At a meeting of the Eugenics Society on Tuesday next, Oct. 17, at 5.30 p.m., in the Rooms of the Royal Society, Burlington House, Piccadilly, W., Dr. Innes H. Pearse, co-director of the Pioneer Health Centre, Peckham, will speak on "The Health Centre and the Family." All interested in this subject are invited to attend.

Dr. H. Courtney Gage was last month awarded the Knights Cross St. Olav (First Class) by the King of Norway for prominent work in the Norwegian cause. When the mass examinations of Norwegians with screen photography started as a routine in London at the beginning of 1941 Dr. Gage, the *Norsk Tidend* of Sept. 27 states, "at once put himself at our disposal and he still goes on with his work of interpreting the miniature *x*-ray pictures. . . . In the more than 3½ years that Dr. Gage has worked for us he has interpreted approximately 13,000 chest radiographs of Norwegians, and also in other fields has he put his enormous radiological knowledge at our disposal."

The distinguished Indian scientists who will shortly visit this country expect to stay for about seven weeks, during which time they will visit important scientific laboratories, and industrial, medical, and agricultural research institutions in and near London, in the Midlands and North of England, and elsewhere in the United Kingdom; they will also discuss modern scientific progress with such bodies as the Royal Society, the Department of Scientific and Industrial Research, the Medical Research Council, the Agricultural Research Council, and the Radio Board. The visit of Indian scientists follows the visit to India last winter of Prof. A. V. Hill, M.P., secretary of the Royal Society. It was then suggested that Indian scientific men should be given an opportunity of coming to the United Kingdom, and of establishing closer relations between the many new scientific organizations in India and corresponding organizations here. The proposal was warmly welcomed by His Majesty's Government and by the Government of India, and steps were at once taken to invite the scientists to come.

The 33rd Long Fox Memorial Lecture will be delivered in the lecture theatre of the H. H. Wills Physics Laboratory (Royal Fort), University of Bristol, on Wednesday, Oct. 18, at 5.30 p.m., by Mr. E. Watson-Williams, Ch.M.; subject, "English Doctors from Smollett to Trollope."

A limited number of rubber hot-water bottles are to be manufactured within the next few months, and some have been allocated to the Ministry of Health, which now controls distribution, to hospitals. The Ministry emphasizes that rubber hot-water bottles should be used only in cases for which on medical grounds other types are unsuitable. Hospitals should apply, through their usual suppliers, to the Priority Officer, Ministry of Health, S.W.1.

# Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to The EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Alitiology Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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## ANY QUESTIONS?

### Palliative Treatment for Cerebral Tumour

**Q.**—*A woman aged 41 has been suffering for the last 13 years from increasing "bursting" headaches and epileptiform attacks. Cerebral tumour has been diagnosed, and operative treatment advised. The patient, aware of the danger of the operation, is not willing to have it done. Is there any other treatment—palliative or other—which would relieve her headaches and epileptiform attacks?*

**A.**—If the cause of the fits and headaches is in fact a cerebral tumour no other treatment apart from that directed at symptomatic relief of symptoms is likely to be of benefit. Presumably the patient is receiving adequate doses of analgesics and of anticonvulsants such as phenobarbital, bromides, or epanutin. Without knowing the pathological nature of the tumour radiotherapy should not be undertaken.

### Rhubarb and Breast Milk

**Q.**—*My health visitors are constantly being asked by the welfare mothers for advice with regard to rhubarb, the fruit. Have either the cathartic principles or the oxalic acid any inimical effect on the breast milk?*

**A.**—The cathartic principles of rhubarb are present in small amount only in the fruit, and normally the root or rhizome is used as a source. The principles in rhubarb are similar to those in senna, and pulv. glycyrrhizae co. has always been a recommended purgative for mothers on the ground that it does not affect the milk in the way castor-oil does. Hence so far as the cathartic principles are concerned, rhubarb fruit should be blameless. Rhubarb contains oxalic acid and can lead to stones of calcium oxalate in the urinary tract. Some may think that the oxalate will lower the blood calcium and affect the calcium in the milk. Large amounts of oxalate have been shown to lower the blood calcium in mice and to produce symptoms consequent on this. I cannot imagine, however, that medical officers at welfare clinics or health visitors propose to recommend rhubarb as daily fare. Probably there is sufficient oxalate in rhubarb to make that inadvisable, whether the subject

a nursing mother or not. But if the question is whether rhubarb should be forbidden, I think the answer is no. The use of rhubarb two or at most three times weekly when it is in season is not going to be attended by any serious effect on the blood calcium of the mother, and the baby would not be deprived. I would say there is no possibility of the oxalic acid getting into the baby's system as it would be combined with calcium in the mother.

### An Intense Skin Irritation

*Q.—What treatment would you advise for intense skin irritation coming on usually at night, and especially after washing, in an otherwise healthy woman of 79? The condition has come on gradually, being felt first only after a bath. The last few years the severity has increased, though with the same routine and diet there will be one perfectly restful night, followed by one of complete sleeplessness when the patient feels she "will go mad." No rash is visible, but the skin is that of an old woman—dry and without much subcutaneous fat.*

A.—Some degree of general dermatitis is often present in these cases, which may be relieved by avoiding baths and applying boric-zinc ointment. Whole blood injections have sometimes proved successful, or one of the synthetic oestrogen compounds. In view of the age of the patient and nature of the skin, the prognosis is not good. As a last resort ultra-violet or high-frequency radiation may be considered.

### Calcinosis Universalis

*Q.—A child aged 6 has for several years been forming deposits of calcium salts (proved by biopsy) in her subcutaneous tissues. The nodules vary in size and shape and are widely distributed in her upper and lower limbs. Some are in relation to the joints, and hinder movements. Several have produced pressure necrosis of the overlying skin and ulceration has resulted. The percentages of blood calcium and phosphorus are within normal limits. The child appears well in every other respect. What is the cause of this abnormality? What line of treatment is advised? Would parathyroid hormone be likely to improve matters, in conjunction with a low calcium intake?*

A.—This is the condition known as calcinosis universalis in which widespread deposits of calcium occur in the skin, the subcutaneous tissues, and the connective tissue of muscles, tendons, fascia, and nerves. The cause of the abnormality is unknown, though the early onset would suggest a hereditary bias. Myositis ossificans is closely related, if not identical. The local lesions are undoubtedly favoured by trauma, and nodules develop at the site of venepuncture or biopsy. It is stated that the affected tissues have an increased affinity for calcium and phosphorus and an increased phosphatase activity. Although spontaneous recovery has been reported, the outlook is bad and the patient is likely to die from progressive immobilization. Parathyroid hormone has been advised in conjunction with a low calcium intake, but is unlikely to be effective for long owing to the development of resistance to this hormone. It is recommended that the maximum dose tolerated should be injected on alternate days. Benefit has also been reported from sodium acid phosphate and from a ketogenic diet. Another possibility, apparently untried in this disease, would be to diminish phosphorus absorption by the ingestion of aluminium acetate or gluconate, on the lines suggested by Helfet for parathyroid disease (*Brit. J. Surg.*, 1939, **27**, 651). If attempts are made to deplete the body of calcium or phosphorus a careful watch should be kept on the skeleton in view of the danger of rickets. It would, in fact, be more rational to try to inhibit the excessive phosphatase activity, but little has so far been published in this field.

### Salpingitis

*Q.—A young woman, aged 24, has had primary dysmenorrhoea since puberty, which was eased by dilatation and curettage last year. In 1941 a slight brown discharge for a few months ceased after a single vaginal examination. Her health has otherwise been excellent. This June she got married. In August she got a mild salpingitis which is settling with rest and local heat. Sulphadiazine had little effect. There was little rise in temperature or pulse, but the B.S.R. is 12 in the first hour. On examination the uterus is in normal position, but both the tubes and left ovary are tender. As the condition settled there has appeared mucus in the stools and a slight vaginal discharge, which shows non-specific organisms. Husband and wife have no evidence of gonorrhoea. What is the aetiology, treatment, and prognosis for later pregnancy, of "catarrhal salpingitis"?*

A.—The onset of subacute salpingitis within two months of marriage is highly suspicious of a gonococcal infection. This can only be excluded by repeated examination of smears from the cervix and urethra. A gonococcal complement-fixation test should also be performed on a sample of blood. A negative result is not proof of the absence of gonococcal infection, but a positive result is valuable. The test should also be performed on the husband. Another possibility is that this is a tuberculous infection. This might be disclosed by curettage and careful microscopical examination of the endometrium. Curettage had best be postponed for two or three months until the condition has settled down. It is important to make a diagnosis if possible. A gonococcal or non-specific salpingitis will be likely to respond to a course of pelvic diathermy. In the presence of a tuberculous infection pelvic diathermy is dangerous and strongly contraindicated. The ultimate prognosis with regard to the pregnancy depends largely on whether the Fallopian tubes are patent. Cases of gonococcal salpingitis often respond very well to pelvic diathermy, and tubal patency is re-established. In tuberculous salpingitis the outlook for child-bearing is very poor indeed—probably hopeless. A tubal patency test is, of course, dangerous in the presence of active infection, and should not be performed until the diagnosis is established and the sedimentation rate normal. "Catarrhal salpingitis" is a conglomerate term applied to those cases where salpingitis exists without pus formation. Most of the cases are undoubtedly gonococcal in origin, though other organisms, such as the *Bacillus coli*, may be responsible.

### Growth of Hair in Menopausal Women

*Q.—What is the best treatment for the growth of a moustache in a woman aged 48 who had an uneventful menopause two years ago? Are glandular preparations useful? If electrolysis is recommended, where can this treatment be had?*

A.—Some slight increase in the hair on the lip is not unusual at the climacteric, presumably due to the coincident hypertrophy of the adrenal cortex. In women with a tendency to virilism, often familial and genetic, this may occur to an extent which becomes cosmetically troublesome. Unless, however, the hirsutism is due to a pituitary or adrenal neoplasm, specific therapy is usually of no value. Electrolysis is carried out by some dermatologists, but it is also practised by lay people of variable competence.

### Lactation and Infertility

*Q.—There is a popular opinion among laymen that a woman who has given birth to a child cannot again conceive so long as she continues breast-feeding. In my experience conception during breast-feeding is rare but, according to data given, not impossible. Can you tell me: (a) what is the relative fertility of the breast-feeding period compared with other times? (b) if the mother continues normal breast-feeding for, say, nine months, and does not menstruate, can any definite infertile periods be ascertained during those nine months?*

A.—Popular opinion in this respect is to some extent supported by experimental and clinical observations. In general it can be stated that lactation and ovarian activity are antagonistic, although the relation is probably not a direct one. In the absence of lactation menstruation usually begins again within two to three months after delivery. Lactation tends to postpone its onset, and it has been estimated that 75% of lactating women do not begin to menstruate again until at least five months after delivery. But there are wide variations and menstruation may reappear at any time from six weeks to one year or longer. The converse is also true, and when menstruation begins the supply of breast milk tends to deteriorate.

The question of post-parturitional fertility is made difficult by the fact that the re-establishment of menstruation and that of ovulation do not necessarily coincide. Thus the first few menstrual periods may be anovular in type. On the other hand, ovulation may precede the onset of menstruation and conception can take place even when amenorrhoea persists. Indeed, it is not rare to meet women who for a period of eight or ten years have never menstruated, and who have been constantly in a state of pregnancy or lactational amenorrhoea. Individual variations are so great that the most that can be said is that: (*a*) Fertility is extremely low during the first two or three months of breast-feeding. After that time a persistence of amenorrhoea usually indicates continued low fertility, but cannot be relied on to any extent. (*b*) During lactational amenorrhoea there is no reliable means applicable to the conditions of ordinary practice for determining when ovulation recommences and when the phase of temporary sterility is over.

### Cold Agglutinins and the Paul-Bunnell Test

*Q.—Will the cold agglutinins which appear in such conditions as primary atypical pneumonia give rise to a positive Paul-Bunnell test?*

A.—The criteria laid down for the definition of non-specific cold agglutinins are (1) that activity is greatest at 0.5° C. and diminishes as temperature increases, disappearing altogether at 37° C., and (2) that the phenomenon affects human erythrocytes of all blood groups and usually a variety of animal cells as well. The Paul-Bunnell reaction, on the other hand, occurs at 37° C. and is most marked with sheep or horse R.B.C.'s. In performing the cold agglutinin test, therefore, falling dilutions of the patient's serum are mixed with a 3% suspension of Group O red corpuscles, the tubes are put in the refrigerator (2–4° C.) overnight, and the results read next morning. To be significant, the agglutinin titre must exceed

a dilution of 1: 16 of the patient's serum. Agglutination, if present, can be reversed by placing the tubes in a water-bath or incubator at 37° C.

The Paul-Bunnell test is carried out with a suspension (0.5–2%) of sheep R.B.C.'s, the mixture of serum and cells is incubated at 37° C. for 1 to 2 hours, and the results read immediately or after standing at room temperature overnight. (The tubes should not be put in the cold as is sometimes recommended.) The diagnostic titre depends on the particular technique used; it usually lies between 1: 50 and 1: 100. Thus there is little likelihood of confusion between the two tests, and a significantly positive Paul-Bunnell reaction will not occur with the infections—e.g., virus pneumonia and trypanosomiasis—that give rise to cold agglutinins provided the tests are correctly performed. A false positive Paul-Bunnell reaction may occur in serum sickness, but these agglutinins may be removed by absorption of the serum with an emulsion of guinea-pig kidney.

The rationale of the Paul-Bunnell test was described in the reply printed in the *Journal* of Dec. 11, 1943, p. 771: and cold agglutinins in the *Journal* of April 1, 1944, p. 481.

### Flea Bites

Q.—*A woman of clean habits has always been susceptible to insect bites. With canteen work and more use of public vehicles, life has become a misery. She never comes in without a flea, which never leaves her until it is found and destroyed. Is there any liquid or powder one could spray on the body and clothes which would act as a repellent, or preferably as an insecticide? Why are some people's reactions to a flea bite so violent, sometimes resulting in urticarial spots, while with some people the reaction is hardly noticeable?*

A.—Fleas are prevalent in warm weather and seem to have been particularly bad this summer. The foci of infestation are usually in houses where fleas breed in undisturbed corners; it is most unlikely that they would breed in public conveyances if these are reasonably clean. It is, however, quite easy to acquire fleas by close contact with people from infested homes. Unfortunately no repellent can be recommended at present, most of the older remedies being as unpleasant for the human skin or nose as for the flea. It may be found that spraying the socks with strong insecticide will act as a deterrent, for fleas cannot jump upwards more than five or six inches. Unless people are exposed to special risk from fleas by reason of their occupation, an infestation at home should be suspected in case of frequent attacks. In clean homes fleas can usually be traced to pet animals; both the cat and dog fleas are liable to bite man. The sleeping place of any pet as well as its fur should be carefully examined. Some people are known to be much more sensitive to flea bites than others, which is the usual case with reaction to insect bites. It would appear that the irritation is a form of allergy. It is probably for this reason that some people are apparently immune from bites, while others complain that they seem to attract fleas.

## INCOME TAX

### Benefits in Kind

M. S. employs a surgery cleaner whom he supplies with dinners and teas; can he charge the cost of the meals as a professional expense?

*** Certainly. As to the amount to be charged, it is not possible to give advice other than to say that a reasonable estimate of the cost of the food should be the basis of the amount which can be charged.

### Appointments: Schedule D Assessment

"A. B. C." writes: "Since the beginning of the war my earned income has come from appointments only and I have been assessed under Schedule D, just as I was assessed when in general practice." He asks whether he would have been liable for less tax if he had been assessed under Schedule E.

*** It is not possible to give a categorical answer, as the choice of schedule may have worked both ways. On the one hand the rules with regard to expenses (particularly the expense of travelling between residence and the place of work) are rather more rigorous under Schedule E, and "A. B. C." may have benefited from assessment under Schedule D in that respect. On the other hand cancellation of 7/12ths of the tax assessed for 1943–4 applies only to emoluments assessable under Schedulel E, and "A. B. C." has lost that advantage. On balance "A. B. C." has probably lost, but as he is presumably not paying tax for 1944–5 under the "pay-as-you-earn" system, there is, so far as he is concerned, no overlapping of tax deductions—which, of course, is the reason for the cancellation. If the loss is material application might be made to the inspector of taxes to treat the assessment as if it had been made (as apparently it should have been made) under Schedule E, or alternatively to discharge that assessment and create another under Schedule E to which cancellation will apply.

## LETTERS, NOTES, ETC.

### Ingrowing Toenail

Wing Cmdr. A. Ronald (Cosford) writes: It surprised me that in the various methods of palliative treatment recommended for ingrowing toenail (Sept. 16, p. 390) the most effective and simplest method—namely, packing under the nail edge with cotton-wool or tinfoil—should be given last of four methods, and the most important point of all omitted—i.e., that the nail must be allowed to grow beyond the end of the toe. Any treatment by a cutting of the nail either in "Vs" or otherwise must result in formation of a chisel edge which on walking produces a fresh ulcer, and it is only by allowing the nail to grow in its normal way beyond the end of the toe that the condition can be really cured. So-called "radical treatment" by amputating half the phalanx from such an important weight-bearing structure as the great toe seems a terrible confession of failure on the part of surgeons as a whole. If packing under the nail edge should fail to cure the condition, which is most unlikely if the packing is persisted with over three or four months, then a very effective and rapid method of dealing with the complaint is removal of the nail and nail-bed followed at once by split skin graft.

Dr. W. F. Cooper (Kingston Hill) writes: You had a note on ingrowing toenails (Sept. 16, p. 390). A very simple method is to file the middle part of the nail almost to the bed instead of cutting a piece out; it can be repeated as often as required, is quite painless, and efficient. Some nails have debris under parts, causing irregular growth; but it is easy to file the nail down, to scrape out the debris and cut off what is necessary, so that the nail grows normally. Nails are best filed when dry and cold, but cut best when wet and as hot as possible (forming the other type of chitin). A bastard-cut file is best for toes, and smooth-cut for fingers.

### "Cracked Fingers"

Col. S. Haughton, I.M.S. (ret.), writes: The following treatment may help the doctor who asks this question (Sept. 9, p. 361). I suffer frequently from "cracked fingers" due mainly to gardening. This treatment has never yet failed to cure this condition with me. (1) With an ordinary nail-file file away any hard skin. (2) Paint the cracks with friar's balsam. (3) Splint the tip of the finger with elastoplast. If the crack is at the tip of the finger one requires a piece of plaster from palmar to dorsal surface and then a second piece round the finger. If the crack is at the side then a circular piece is sufficient. I reapply after 4 days. My cracks are always healed in 7 to 10 days. It is the splinting by the "elastoplaster" with the subsequent rest the finger gets that allows the cracks to heal so quickly. With me this never fails and all pain goes at once.

Lieut.-Col. M. Orr Wilson (Plymouth) writes: Another very good treatment for cracks on the finger-tips which are very painful and difficult to heal is the use of methylated ether to cleanse the skin after the removal of plasters. A finger-stall made of elastoplast soon stops the pain and heals the crack. Ordinary anaesthetic ether does not seem to have the same effect. This note is the result of painful experience and further experiments.

### W.C. Equipment

"M.D." writes: I would suggest that the lack of facilities for washing after defaecating can be overcome by using absorbent cotton, which can be soaked in the water entering the pan. Scrupulous cleanliness is impossible with ordinary toilet paper. I suffered for years from pruritus ani until I had my appendix removed, and found that the only way to relieve it was by washing after defaecation and applying surgical spirit.

### Cerebrospinal Fever Investigation in Scotland

Dr. J. Smith, F.R.C.P., Director of the City Hospital Laboratory, Aberdeen, writes to correct an omission in the leading article on treatment of cerebrospinal fever (Oct. 7, p. 475). Aberdeen also participated in the investigation.

### Sensitivity to Sulphonamides

The reader who asked the question under the above heading in the *Journal* of Sept. 16 (p. 390) now writes: In the case which I quoted, where the patient developed irritation of the hands, mouth, and anus on taking sulphathiazole, I tried the effect of giving nicotinic acid with the drug and was completely successful in overcoming the symptoms of irritation. I began with 0.25 g. sulphathiazole and 50 mg. nicotinic acid, and, as no irritation resulted, followed this with a similar dose in two hours, then 0.5 g. plus 50 mg. nicotinic acid in another 4 hours. After that I gave 1 g. sulphathiazole and 100 mg. nicotinic acid three times daily for several days with complete success, there only being very slight and transient irritation of the hands about one hour after each dose.